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E cket No. CP04-413-00, et al.

FERC/EIS-0175D

ENTREGA PIPELINE PROJECT



Federal Energy Regulatory Commission
Washington, DC

Cooperating Agency:
Bureau of Land Management

February 2005

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Draft Environmental Impact Statement

Entrega Gas Pipeline Inc. Docket No. CP04-413-00, et al.

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FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D.C. 20426

OFFICE OF ENERGY PROJECTS

In Reply Refer To:
OEP/DEER/Gas Group 1
Entrega Gas Pipeline Inc.
Docket Nos. CP04-413-000, et al.
BLM Reference No. WYW-158830

TO THE PARTY ADDRESSED:

The environmental staff of the Federal Energy Regulatory Commission (FERC or Commission) has prepared this draft Environmental Impact Statement (EIS) on the interstate natural gas pipeline transmission facilities proposed by Entrega Gas Pipeline Inc. (Entrega) in the above-referenced dockets.

This draft EIS was prepared to satisfy the requirements of the National Environmental Policy Act (NEPA). Its purpose is to inform the Commission, the public, and other permitting agencies about the potential adverse and beneficial environmental impacts associated with the proposed project and its alternatives, and to recommended practical, reasonable, and appropriate mitigation measures which would avoid or reduce any significant adverse impacts to the maximum extent practicable and, where feasible, to less than significant levels. The draft EIS concluded that the proposed project, with the potential exception of two route segments (the Piceance Basin Expansion Route Alternative and the Cheyenne Hub Variations), and with appropriate mitigating measures as recommended, would have limited adverse environmental impact. Additional public input is specifically being sought on these two segments to complete the routing analysis for the final EIS.

The U.S. Department of Interior, Bureau of Land Management (BLM) is participating as a cooperating agency in the preparation of this draft EIS because the project would cross federal lands under BLM administration in Wyoming and Colorado. The draft EIS will be used by the BLM to consider the issuance of a right-of-way (ROW) grant for the portion of the project on all federal lands. While the conclusions and recommendations presented in this draft EIS were developed with input from the BLM as a cooperating agency, the BLM will present its own conclusions and recommendations in its Record of Decision for the project.

Proposed Project

The Entrega Pipeline Project involves the construction and operation of a new interstate natural gas pipeline system that would extend between a proposed Meeker Hub in Rio Blanco County, Colorado, Wamsutter, in Sweetwater County, Wyoming, and the Cheyenne Hub in Weld County, Colorado. The draft EIS assesses the potential environmental effects of the construction and operation of the following facilities in Colorado and Wyoming:

- about 327.5 miles of new pipeline of 36- and 42-inch-diameter pipeline –

  - 136.0 miles of 36-inch-diameter pipeline, with 86.2 miles in Colorado (Rio Blanco and Moffat Counties) and 49.8 miles in Wyoming (Sweetwater County); and

  - 191.5 miles of 42-inch-diameter pipeline, with 183.0 miles in Wyoming (Sweetwater, Carbon, Albany, and Laramie Counties) and 8.5 miles in Colorado (Larimer and Weld Counties);

- three new compressor stations (the Meeker Hub and Bighole Compressor Stations in Colorado, the Wamsutter Compressor Station in Wyoming);

- seven meters at interconnections with other pipeline systems (three associated with the new compressor stations, four at the new Cheyenne Hub Metering Station in Wyoming);

- four pig launchers and four pig receivers (six associated with compressor and metering stations, one launcher and one receiver at the new Arlington Pigging Station in Wyoming);

- 22 mainline valves (5 valves at compressor and metering stations, 17 valves along the pipeline ROW); and

- other associated facilities, such as access roads and powerlines.

The proposed project would be capable of transporting up to 1.5 billion cubic feet of natural gas per day (Bcfd) from the Meeker Hub Compressor Station to interconnections at:

- Wamsutter, Wyoming with the Colorado Interstate Gas Company (CIG) and Wyoming Interstate Company transmission systems that serve markets east and west of Wamsutter; and

- the Cheyenne Hub (Weld County, Colorado) with CIG, Cheyenne Plains Gas Pipeline Company, Trailblazer Pipeline Company, and Public Service Company of Colorado. These systems would transport gas to markets in the Midwest and Central U.S. and the Eastern Slope south of the Cheyenne Hub.

Comment Procedures and Public Meetings

Any person wishing to comment on the draft EIS may do so. To ensure consideration of your comments on the proposal in the final EIS, it is important that we receive your comments before the date specified below. **Please follow these instructions carefully to ensure that your comments are received in time and are properly recorded:**

- Send **an original and two copies** of your comment to:

  Magalie R. Salas, Secretary
  Federal Energy Regulatory Commission
  888 First Street, NE, Room 1A
  Washington, DC 20426;

- Reference **Docket Nos. CP04-413-000, et al.**;
- Label one copy of your comments for the attention of **Gas Branch1, PJ11.1**; and
- **Mail your comments so that they will be received in Washington, DC on or before April 18, 2005.**

The Commission strongly encourages electronic filing of any comments or interventions or protests to this proceeding. See 18 Code of Federal Regulations (CFR) 385.2001(a)(1)(iii) and the instructions on the Commission's website at http://www.ferc.gov under the "e-Filing" link and the link to the User's Guide. Prepare your submission in the same manner as you would if filing on paper and save it to a file on your hard drive. Before you can file comments, you will need to create a free account, which can be created by clicking on "Login to File" and then "New User Account."

In addition to or in lieu of sending written comments, the Commission invites you to attend a public comment meeting in the project area. Meetings are scheduled as shown below.

Schedule for Public Comment Meetings

Date and Time	Location
Monday, April 11, 2005 at 7:00 p.m.	Best Western Hitching Post 1700 West Lincolnway, **Cheyenne**, WY
Tuesday, April 12, 2005 at 7:00 p.m.	Hungry Miner Restaurant 2300 West Spruce, **Rawlins**, WY
Wednesday, April 13, 2005 at 7:00 p.m.	Moffat County Extension Office – CSU 539 Barclay Street, **Craig**, CO
Thursday, April 14, 2004 at 7:00 p.m.	CSU Extension 779 Sulfur Creek Road, **Meeker**, CO

Interested groups and individuals are encouraged to attend and present oral comments on the draft EIS. Transcripts of the meetings will be prepared.

After these comments are reviewed and considered, modifications will be made to the draft EIS and it will be published and distributed as a final EIS. The final EIS will contain responses to timely comments filed on the draft EIS.

Comments will be considered by the Commission but will not serve to make the commentor a party to the proceeding. Any person seeking to become a party to the proceeding must file a motion to intervene pursuant to Rule 214 of the Commission's Rules of Practice and Procedures (18 CFR 385.214). Only intervenors have the right to seek rehearing of the Commission's decision.

Anyone may intervene in this proceeding based on the draft EIS. You must file your request to intervene as specified above.[1] **You do not need intervener status to have your comments considered.**

The draft EIS has been placed in the public files of the FERC and is available for public inspection at:

Federal Energy Regulatory Commission
Public Reference Room
888 First Street, NE, Room 2A
Washington, D.C. 20426
(202) 502-8371

Copies also are available for reading at the following locations:

BLM Field Office	Address	City/State	Zip Code
White River Field Office	73544 Hwy 64	Meeker, CO	81641
Little Snake Field Office	455 Emerson Street	Craig, CO	81625
Rawlins Field Office	1300 N. Third	Rawlins, WY	82301
Wyoming State Office	P.O. Box 1828	Cheyenne, WY	82003
Library	**Address**	**City/State**	**Zip Code**
Albany County Library	310 South 8th Street	Laramie, WY	82070
Bairoil Branch Library	P.O. Box 40	Bairoil, WY	82322
Burns Branch Library	P.O. Box 220	Burns, WY	82053
Carol A. Brown Library	2500 College Drive	Rock Springs, WY	82902
Carbon County Library	215 West Buffalo Street	Rawlins, WY	82301
Centennial Branch Library	P.O. Box 188	Centennial, WY	82055
Cheyenne Library	2800 Central Avenue	Cheyenne, WY	82001
Craig Library	570 Green Street	Craig, CO	81625
DeBeque Library	730 Minter Avenue	DeBeque, CO	81630
Elk Mountain Branch Library	P.O. Box 156	Elk Mountain, WY	82324
Encampment Branch Library	P.O. Box 495	Encampment, WY	82325
Glenwood Springs Branch	413 9th St.	Glenwood Springs, CO	81601
Greeley Library	1939 61st Avenue	Greeley, CO	80634
Hanna Library	P.O. Box 297	Hanna, WY	82327
Laramie Library	310 S. 8th Street	Laramie, WY	82070
Little Snake River Valley	105 2nd Street	Baggs, WY	82321
Medicine Bow Branch Library	P.O. Box 279	Medicine Bow, WY	82329
Meeker Library	200 Main Street	Meeker, CO	81641
Morgan Library	Colorado State University	Fort Collins, CO	80526
Parachute Branch Library	244 Grand Valley Way	Parachute, CO	81635
Pine Bluffs Branch Library	P.O. Box 639	Pine Bluffs, WY	82082
Rangley Library	109 East Main Street	Rangley, CO	81641
Rifle Branch Library	107 East 2nd	Rifle, CO	81650
Rock River Branch Library	P.O. Box 213	Rock River, WY	82083
Rock Springs Library	400 C Street	Rock Springs, WY	82901
Saratoga Branch Library	P.O. Box 27	Saratoga, WY	82331
Sinclair Branch Library	P.O. Box 8	Sinclair, WY	82334

[1]Interventions also may be filed electronically via the Internet in lieu of paper. See the previous discussion on filing comments electronically.

Library	Address	City/State	Zip Code
Sweetwater County Library	300 N. 1st East Street	Green River, WY	82935
University of Wyoming	1000 East University Avenue	Laramie, WY	82071
Wamsutter Library	230 Tierney	Wamsutter, WY	82336
White Mountain Library	2935 Sweetwater Drive	Rock Springs, WY	82901

A limited number of copies are available from the FERC's Public Reference Room identified above. In addition, copies of the draft EIS have been mailed to federal, state, and local agencies; public interest groups; individuals and affected landowners who have requested the draft EIS; libraries; newspapers; and parties to this proceeding.

Additional information about the proposed project is available from the Commission's Office of External Affairs, at **1-866-208-FERC** or on the FERC Internet website (www.ferc.gov) using the "eLibrary" link. Click on the eLibrary link, click on "General Search" and enter the docket number excluding the last three digits (CP05-413) in the Docket Number field. Be sure you have selected an appropriate date range. For assistance, please contact FERC Online Support at FERCOnlineSupport@ferc.gov or toll free at 1-866-208-3676, or for TTY, contact (202) 502-8659. The eLibrary link on the FERC internet website also provides access to the texts of formal documents issued by the Commission, such as orders, notices, and rulemaking.

In addition, the Commission now offers a free service called eSubscription which allows you to keep track of all formal issuances and submittals in specific dockets. This can reduce the amount of time you spend researching proceedings by automatically providing you with notification of these filings, document summaries and direct links to the documents. Go to the eSubscription link on the FERC internet website.

Information concerning the involvement of the BLM is available from Tom Hurshman, BLM Project Manager, at (970) 240-5345.

Magalie R. Salas,
Secretary

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ACRONYMS

°F	Degrees Fahrenheit
ACEC	Area of critical environmental concern
ACHP	Advisory Council on Historic Preservation
APE	Area of potential effects
APLIC	Avian Power Line Interaction Committee
AQCC	Air Quality Control Commission
AQRV	Air quality related values
ARPA	Archaeological Resources Protection Act
BA	Biological assessment
BACT	Best available control technology
Bcf	Billion cubic feet
Bcfd	Billion cubic feet per day
BLM	Bureau of Land Management
BMP	Best management practices
CAA	Clean Air Act
CDMG	Colorado Division of Minerals and Geology
CDOW	Colorado Division of Wildlife
CDPHE	Colorado Department of Public Health and Environment
CEQ	Council on Environmental Quality
Certificate	Certificate of Public Convenience and Necessity
CFR	Code of Federal Regulations
CIG	Colorado Interstate Gas Company
CM&R Plan	Construction, Mitigation, and Reclamation Plan
CO	Carbon monoxide
CO_2	Carbon dioxide
COE	U.S. Corps of Engineers
Commission	Federal Energy Regulatory Commission
CR	County Road
CWA	Clean Water Act of 1972
dB	Decibels
dBA	Decibels on the A-weighted scale
Director of OEP	Director of the Office of Energy Projects
DOT	U.S. Department of Transportation
EFH	essential fish habitat
EI	Environmental Inspectors
EIS	Environmental Impact Statement
El Paso	El Paso Pipeline Group
EnCana	Entrega Gathering Services
Entrega	Entrega Gas Pipeline Inc.
Entrega's Plan	Upland Erosion Control, Revegetation, and Maintenance Plan
Entrega's Procedures	Wetland and Waterbody Construction and Mitigation Procedures

ACRONYMS

EO	Executive Order
EPA	U.S. Environmental Protection Agency
EPP	Entrega Pipeline Project
ERP	Emergency Response Plan
ESA	Endangered Species Act
FERC	Federal Energy Regulatory Commission
FO	Field Office
FR	Federal Register
FWS	U.S. Fish and Wildlife Service
H_2S	Hydrogen sulfide
H_2S_2	Hydrogen disulfide
HAP	Hazardous air pollutant
HCA	high consequence areas
HDD	horizontal directional drill
HMA	Herd management area
I-80	Interstate 80
ISO	International Organization for Standardization
KOP	Key Observation Point
kV	kilovolt
L_{dn}	day-night equivalent sound level
L_{eq}	equivalent sound level
MACT	Maximum Achievable Control Technology
MAOP	Maximum allowable operating pressure
MBTA	Migratory Bird Treaty Act
MLA	Mineral Leasing Act of 1920
MMBtu/hr	Million British thermal units per hour
MMcfd	Million cubic feet per day
MMI	Modified Mercalli Intensity
MOU	Memorandum of Understanding
MP	Milepost
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NGA	Natural Gas Act
NHPA	National Historic Preservation Act of 1986
NO_2	Nitrogen dioxide
NOI	Notice of Intent
NO_x	Oxides of nitrogen
NPDES	National Pollution Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSA	noise-sensitive area
NSPS	New Source Performance Standards

NWI	National Wetland Inventory
O_3	Ozone
OPS	Office of Pipeline Safety
PM_{10}	Particulate matter with an aerodynamic diameter of 10 microns or less
$PM_{2.5}$	Particulate matter with an aerodynamic diameter of 2.5 microns or less
POD	Plan of Development
ppmw	parts per million by weight
PSCO	Public Service Company of Colorado
PSD	Prevention of Significant Deterioration
Psig	Pounds per square inch, gauge
RMP	Resource management plan
ROD	Record of Decision
ROW	Right-of-way
RSPA	Research and Special Programs Administration's
RV	recreational vehicle
SCADA	Supervisory Control and Data Acquisition
Secretary	Secretary of the Commission
SHPO	State Historic Preservation Officer
SO_2	Sulfur dioxide
SO_x	Sulfur oxides
SPCC Plan	Spill Prevention, Control, and Countermeasures Plan
SRMA	Special Recreational Management Area
STATSGO	State Soil Geographic database
SWA	State Wildlife Area
SWPPP	Storm Water Pollution Prevention Plan
TBI	Tom Brown Inc.
Tcfy	Trillion cubic feet per year
Tpy	Tons per year
TTMP	Traffic and Transportation Management Plan
U.S.	United States
UBL	Uinta Basin Lateral
USDI	U.S. Department of Interior
USGS	U.S. Geological Survey
VOC	Volatile organic compound
VRM	Visual Resource Management
WAQS&R	Wyoming Air Quality Standards and Regulations
WDEQ	Wyoming Department of Environmental Quality
WGFD	Wyoming Game and Fish Department
WHMA	Wildlife Habitat Management Area
WIC	Wyoming Interstate Company

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

The Entrega Pipeline Project Draft Environmental Impact Statement (EIS) has been prepared by the staff of the Federal Energy Regulatory Commission (FERC or Commission) with the cooperation and assistance of the Bureau of Land Management (BLM). The Draft EIS was prepared to fulfill the requirements of the National Environmental Policy Act (NEPA); the Council on Environmental Quality regulations for implementing NEPA (Title 40 of the Code of Federal Regulations, Parts 1500 -1508 [40 CFR 1500 -1508]); the FERC's implementing regulations (18 CFR 380); and the BLM's right-of-way grant regulations (43 CFR 2800 and 2880).

Entrega Gas Pipeline, Inc. (Entrega) proposes to construct, own, and operate a new natural gas transmission system in Colorado and Wyoming. The proposed facilities would be capable of transporting 1.5 billion cubic feet per day (Bcfd) of natural gas from supply basins in the central Rocky Mountains to the Cheyenne Hub (Weld County, Colorado). From here, other interstate transporters would be able to ship the gas to markets in the Midwestern and Central United States (U.S.).

In accordance with NEPA, this document's purpose is to inform the FERC decision-makers, the public, and other permitting agencies about the potential adverse and beneficial environmental impacts associated with the proposed project and its alternatives, and to recommend practical, reasonable, and appropriate mitigation measures that would reduce adverse impacts to the extent possible. Most of the environmental impacts would occur during the construction period. We considered and/or evaluated a range of system and route alternatives, route variations, and compressor station site alternatives.

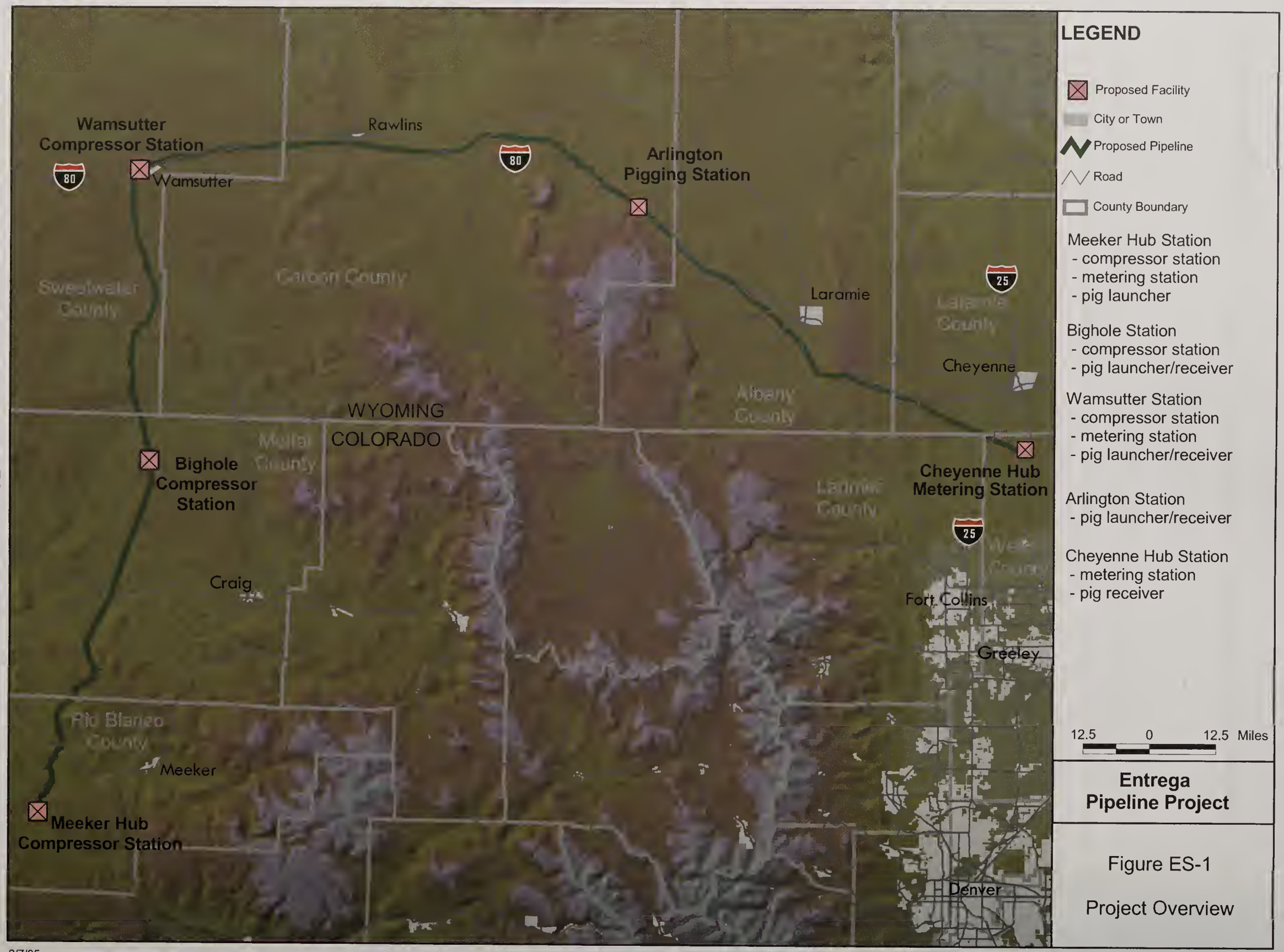
PROPOSED ACTION

The purpose of the Entrega Pipeline Project (EPP) is to transport natural gas from supply basins in the Central Rocky Mountains to markets in the Midwestern and Central U.S. The need for the project is dictated by an increasing gas supply (production) in the Piceance and neighboring production basins that is not being matched by a concurrent increase in pipeline capacity to transport this gas to market.

Entrega would construct and operate 327.5 miles of 36- and 42-inch-diameter interstate natural gas pipeline. The 36-inch-diameter portion would extend between a new Meeker Hub Compressor Station in Rio Blanco County, Colorado, to a new Wamsutter Compressor Station in Sweetwater County, Wyoming. Here, interconnections with two existing interstate shippers would be established. From Wamsutter, the 42-inch-diameter portion would extend eastward to the Cheyenne Hub in Weld County, Colorado, where interconnections with three interstate shippers and one local distribution company would be made (**figure ES-1**). Overall, Entrega's new transportation system would construct 3 compressor stations, 7 metering stations, 22 mainline valves, and other associated facilities.

PUBLIC INVOLVEMENT

On May 3, 2004, the FERC issued a *Notice of Intent to Prepare an Environmental Impact Statement for the Planned Entrega Gas Pipeline Project, Request for Comments on Environmental Issues, and Notice of Public Scoping Meetings and Route Inspection* (NOI). This document briefly described the project



Entrega Pipeline Project

Figure ES-1

Project Overview

ES-2

2/7/05

components, invited written comments from the public on the proposal, and listed the date and location of four public scoping meetings to be held in communities along the route. The NOI was sent to about 1,670 entities on a mailing list that included the landowners crossed and/or adjacent to the proposed right-of-way (ROW); federal and state agencies; Native American tribes; non-governmental and environmental organizations; libraries; the media; and other potentially interested citizens.

We[1] held public scoping meetings in Cheyenne, Wyoming (June 7, 2004), Rawlins, Wyoming (June 8, 2004), Craig, Colorado (June 9, 2004), and Meeker, Colorado (June 10, 2004). During the same time period, we organized and conducted separate "agency" scoping meetings with federal and state agency representatives, and local officials to solicit input and coordinate our review of the proposed project. These meetings were held in Rawlins (June 8, 2004), Craig (June 9, 2004), and Meeker (June 10, 2004).

In addition to oral and written comments received during agency and public scoping meetings, the Commission received written comments during and after the close of the public scoping period (June 15, 2004). In total, 32 written correspondences[2] containing project comments were received. Each letter was evaluated and comments were divided into issue groups. When written comments were combined with oral meeting comments, 166 individual comments were received.

AREAS OF CONCERN RAISED BY COMMENTORS

Issues raised during scoping included project purpose and need; scope of the analysis; alternatives; permits and regulations; construction procedures; land use issues; effects on soils, water, vegetation, wildlife, threatened and endangered species, cultural resources, and air quality; weed management; socioeconomic effects; noise impacts; public safety; cumulative impacts; and compensation and easement agreements. These concerns and others have been addressed in this EIS.

PROJECT IMPACTS

Construction of the proposed EPP would disturb approximately 5,064 acres of land, including the pipeline construction ROW, additional temporary workspace areas, aboveground facility sites, and pipe storage and contractor yards. Approximately 2,084 acres of the 5,064 acres used for construction would be required for operation of the project. The remaining 2,980 acres of land would be restored and allowed to revert to former use.

Approximately 44 percent of the land affected by construction and operation of the EPP would be public lands and 56 percent would be private lands. Of the total public lands, the BLM manages 74 percent, the State of Colorado manages 11 percent, and the State of Wyoming manages 9 percent.

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[1] We," "us," and "our" refer to the environmental staff of the Commission's Office of Energy Projects. Unless specifically identified otherwise, the recommendations and conclusions presented in the EIS are those of the FERC staff.

[2] Written correspondences included letters, Return Mailers (attached to our NOI), and electronic mail. The Commission also received one Congressional correspondence.

Geology (Minerals, Geologic Hazards, Paleontology)

Project construction and operation would not alter existing topography because the construction ROW would be recontoured to match the adjacent terrain. The EPP would not interfere with oil and gas drilling, or any current active mining operations. Because the proposed pipeline would be located adjacent to existing pipelines where they cross shallow coal beds, construction of the EPP would not further reduce access to underlying coal. Potential for earthquake damage from ground shaking and subsidence is very low. Based on the operating experience of existing pipelines, pipeline damage could occur in Rio Blanco and Moffat Counties, Colorado from flash flood debris flows, and sinkholes near stream channels. The proposed Meeker Hub Compressor Station is located on an alluvial fan that could experience debris flows from flash flood events. We have recommended that Entrega identify design measures to insure protection of any aboveground facilities within the 100-year floodplain at this location. The EPP would cross approximately 167 miles of geologic formations that contain vertebrate fossils, and noteworthy occurrences of invertebrate and plant fossils. Entrega has conducted pre-construction surveys, and would monitor pipeline construction to protect or recover important fossils.

Soils and Invasive Plant Species

The majority of the EPP would cross arid to semi-arid native rangelands that are underlain by shallow, droughty soils that are susceptible to wind and water erosion. Other constraints include rocky soils, and alkaline soils. The EPP would not cross prime farmland soils. Entrega would restore the productivity and surface drainage across approximately 15 miles of irrigated hay lands. Entrega would preserve topsoil by limiting soil stripping to the area over the pipeline trench; implementing best available erosion control practices included in its project-specific *Erosion Control, Revegetation, and Maintenance Plan* (Entrega's Plan) and the BLM Plan of Development (POD); and applying revegetation seed mixtures appropriate for the climate and land uses. We have supplemented Entrega's proposed mitigation with additional recommendations to address the control and spread of weeds along the ROW, including pre-construction weed treatments, washing construction equipment, and continuing weed control along the ROW for the life of the project.

Water Resources

Entrega would not use groundwater during construction or operation. We have recommended that Entrega monitor water supply wells and systems near areas where blasting would be conducted, and restore any water supply wells/systems damaged by construction. The EPP would involve 44 perennial waterbody crossings. A horizontal directionally drilled (HDD) crossing would be done at two rivers (White River, Yampa River) to avoid adverse effects on a federally listed fish species. The remaining rivers and streams would be open-cut in accordance with Entrega's project-specific *Wetland and Waterbody Construction and Mitigation Procedures* (Entrega's Procedures) or site-specific waterbody crossing plans. In order to hydrostatically test the proposed pipeline, Entrega would use approximately 56.2 million gallons of water from four different rivers; just over half of the water would be obtained from the North Platte River under a purchase agreement with Bureau of Reclamation. The pipeline would cross about 9 miles of meadow and shrubland wetlands. To minimize wetland impacts, measures from Entrega's Procedures would implemented, which would provide an adequate level of environmental protection.

Vegetation

The EPP would disturb approximately 1,546 acres of grassland, 3,078 acres of shrublands, 199 acres of agricultural land (includes wetlands), and 11 acres of woodlands. Entrega would implement its project-specific *Construction, Mitigation, and Reclamation Plan* (Entrega's Plan) to stabilize and re-seed disturbed areas to restore wildlife and livestock grazing uses. Entrega would be required to implement site-specific measures to avoid or reduce the loss of larger trees in riparian woodland areas at stream and river crossings. We have recommended that Entrega commit to additional protective measures while crossing riparian woodlands and restoring these areas. Revegetation success along the ROW would be monitored for several years by the FERC and BLM staffs. Because of limited rainfall and high evaporation rates, native vegetation community recovery would be long-term, ranging from a minimum of 5 to 7 years in grasslands, 20 to 30 years in shrublands, and more than 50 years in woodland communities.

Fish and Wildlife

Entrega would construct across 32 different waterbodies in Colorado and Wyoming that support fish species, including 6 that support warm-water species and 26 that support cold- water species. Entrega would avoid bank and channel disturbance to the White and Yampa Rivers by using the HDD crossing method. The remaining streams and rivers would be open-cut (trenched) in accordance with Entrega's Procedures or site-specific crossing plans. Entrega would avoid construction of crossings during state agency cold- and warm-water fisheries spawning periods. Open-cut crossings would cause short-term (usually 3 days or less) suspended sediment increases in stream and river channels.

The EPP would disturb wildlife habitat, displace individual animals, and contribute to habitat fragmentation by expanding existing pipeline corridors. The proposed route would cross approximately 29 miles of critical elk, mule deer, and pronghorn winter habitat in Colorado; and 33, 51 and 8 miles of mule deer, pronghorn, and elk crucial winter habitat in Wyoming, respectively. In addition, the pipeline would cross two State Wildlife Areas in Colorado, and two Wildlife Habitat Management Areas in Wyoming. Entrega would avoid construction within designated big game wintering areas during seasonal closure periods, and would install ditch plugs with ramps that would allow animals to cross over open ditch sections and escape from the ditch. Disturbed winter habitat areas would be re-seeded with mixtures approved by state wildlife agencies and the BLM. Our recommendations for big game ranges and ditch plug spacing would further reduce impacts on wildlife.

Entrega's proposed construction schedule would overlap the breeding season for many migratory birds. Entrega would conduct pre-construction raptor nesting surveys and would abide by appropriate buffer zones and seasonal construction restrictions to prevent or minimize impacts on nesting raptors. For other migratory bird species (particularly ground nesting birds), nests (eggs and young) could be lost because of surface disturbance. We believe that these losses would not result in long-term or significant population level impacts.

Special Status Species

We are requesting that the FWS consider the Draft EIS as the Biological Assessment for the proposed project. Our recommended protection measures and effects determinations are discussed below.

Five federally listed plant species (Colorado butterfly plant, Dudley Bluffs bladderpod, blowout penstemon, Dudley Bluffs twinpod, and Ute ladies'-tresses) could potentially occur within the pipeline construction ROW. Entrega would conduct pre-construction surveys to determine the potential presence of these species prior to construction. If listed plant populations are found, we have recommended that Entrega notify the FWS and FERC to determine the most appropriate methods for avoiding or minimizing the loss of individual plants. Based on Entrega-committed and our recommended protection measures, we have determined that the EPP may affect, but is not likely to adversely affect these plant species.

The proposed facilities would require new construction across four major perennial rivers (the White, Yampa, Little Snake, and North Platte). Of these, Entrega has proposed to directionally drill the White and Yampa Rivers to avoid potential impacts to four federally listed fish species. The Colorado pikeminnow and its designated critical habitat are present at the proposed White and Yampa River pipeline crossings. Based on Entrega's HDD crossing plan and a seasonal construction timing window, we have determined that the EPP may affect, but is not likely to adversely affect this fish species or its critical habitat.

Populations of three other fish species (bonytail chub, humpback chub, razorback sucker) were determined to be greater than 30 miles downstream in both rivers, and therefore it is unlikely they would be affected by river crossing activities. Therefore, we have concluded that the EPP may affect, but is not likely to adversely affect these species or their critical habitat.

Entrega also proposes to withdraw hydrostatic test water from the Yampa and White Rivers. Hydrostatic test water withdrawals would be subject to seasonal restrictions, and would potentially be subject to payment of Colorado River threatened and endangered fish recovery fees. We are requesting the FWS determine whether the proposed water withdrawals from these rivers and the return of this water to the same sources would represent a depletion. If these withdrawals are considered a depletion, we request that the FWS consider the EIS our initiation of formal consultation under Section 7 of the Endangered Species Act. We have also recommended that Entrega coordinate with the FWS on the timing of water withdrawal from these rivers to avoid or minimize potential impacts to Colorado River endangered fish species.

One federally listed amphibian (Wyoming toad), one bird (bald eagle), and two mammals (black-footed ferret, Preble's meadow jumping mouse) potentially occur in the project area. Based on known occurrence patterns, and Entrega-committed and our recommended habitat and population protection measures, we have determined that the EPP may affect, but is not likely to adversely affect the bald eagle, black-footed ferret, and Preble's meadow jumping mouse. We have determined that the EPP would not affect the Wyoming toad.

The EPP would cross within 2 miles of 34 historic sage grouse leks (strutting grounds). To prevent disruption of breeding activities, pre-construction surveys would be completed to determine active lek sites. Entrega would construct after June 30 where the pipeline would be located within 2 miles of an active lek

site. In addition, Entrega would minimize habitat impacts to lek sites by reducing the width of the ROW within 0.25 mile of a lek as practical, and would not construct aboveground facilities within 0.25 mile of a lek. Appropriate seed mixtures would be applied to recover sage grouse habitat.

The EPP could potentially affect BLM sensitive species, including 6 plants, 6 mammals, 7 birds, 2 amphibians, 1 reptile, and 4 fish. Based on Entrega-committed protection measures and our analysis, we have concluded that while there may be effects on individuals, construction and operation of the EPP would not cause a trend toward federal listing or loss of species viability.

Land Use, Recreation, and Visual Resources

The primary land use crossed by the EPP would be rangeland that is used for livestock grazing. The proposed construction work area (i.e., the construction ROW and temporary additional workspaces) would not be located within 50 feet of any occupied residences. A total of 2,084 acres would be dedicated to pipeline utility uses for the project life. Of this area, 77 acres would underlie aboveground facilities (compressor stations and associated powerlines, permanent access roads). The remainder of the land commitment would be for the operational pipeline ROW. The EPP would conform to existing BLM land use plans, and would acquire required permits and approvals to construct across state lands. The proposed pipeline would cross approximately 1 mile of a planned development near Laramie, Wyoming. The pipeline would be located within an existing utility corridor where it crosses this proposed development.

The EPP would not cross or affect any developed recreation areas. In Colorado, the project would cross three Colorado Division of Wildlife management areas. In Wyoming, the proposed pipeline would cross six BLM special management areas and two Wyoming Game and Fish Wildlife Habitat Management Areas. Pipeline construction could overlap with summer use of these special management areas, and may extend into the fall big game hunting seasons. Entrega would coordinate with the agency owners of these areas to minimize conflicts with recreational user access to these areas. We have recommended that Entrega develop and implement a plan to avoid conflicts with recreational boater use at the North Platte River crossing site.

The EPP would generally be located in remote rural areas of Wyoming and Colorado, and would be located in or immediately adjacent to existing pipeline utility corridors over nearly its entire route. The EPP would be consistent with BLM Class III and IV Visual Resource Management (VRM) criteria. Entrega has agreed to additional mitigation measures (including construction ROW width reduction) to decrease the visibility of the pipeline ROW to the public in two sensitive areas (the North Platte River crossing at milepost [MP] 192.7, and the SeaWest Windfarm at MP 236.2). Proposed aboveground facilities (compressor stations, metering and pigging facilities) would be located near other existing aboveground facilities. An exception is the Bighole Compressor Station, which would be located in a remote rural location next to a Moffat County, Colorado road on private land. Aboveground facilities would be painted with a color(s) that would conform to the applicable BLM VRM standards.

Cultural Resources

Cultural resource inventories have been conducted along about 95 percent of the proposed route. The surveys identified 73 cultural resource sites in Colorado, and 147 sites in Wyoming within the surveyed area. Of these sites, 40 sites in Colorado and 49 sites in Wyoming have been recommended, or are officially eligible for listing on the National Register of Historic Places (NRHP). Entrega is currently conducting surveys to determine reroute options to avoid known or potentially NRHP-eligible sites. Additional investigations are recommended at a number of cultural resource sites to determine their NRHP eligibility. Approximately 15.5 miles of the proposed route in Wyoming remain to be inventoried.

The process of fully complying with Section 106 of the National Historic Preservation Act has not yet been completed for the EPP. Surveys and evaluative testing have not been completed and reroutes to avoid eligible sites have not been finalized. Once evaluations are complete and it has been determined which sites can or cannot be avoided, the FERC, in consultation with the BLM and the State Historic Preservation Offices (SHPO), would make final determinations of NRHP eligibility and project effects. If historic properties would be adversely affected, a treatment plan to mitigate any adverse effects would be prepared in consultation with the appropriate parties. Once a treatment plan is approved, Entrega would implement the specified treatment measures before notice to proceed with project construction is authorized in any given area. Implementation of treatment would occur only after certification of the proposed project. The FERC would ensure that treatment is carried out.

Socioeconomics and Transportation

Entrega proposes to employ between 2,000 and 2,200 workers to construct the pipeline and aboveground facilities during the first phase of the project (pipeline construction) in the summer and fall of 2005. Entrega estimates that 90 percent of the workforce would consist of non-local personnel. The project would be completed using four separate work forces (spreads), with two spreads in western Colorado, and two spreads in Wyoming. The dispersed construction would reduce the number of workers requiring temporary housing in the vicinity of pipeline work areas. We anticipate that temporary housing would be very limited in Rio Blanco and Garfield Counties, Colorado, based on the quantity of temporary housing and ongoing energy development activities.

We anticipate increased short-term demand for public services, particularly for emergency medical response. Long-term demands for public services would not occur because of the small operational workforce. Local communities would receive short-term benefits from worker goods and services expenditures, and long-term benefits from property taxes. The aggregate assessed valuation for pipeline and aboveground facilities was estimated to be $102.9 million, of which 46 percent of the value would be in Wyoming, and 54 percent in Colorado. Total annual property tax on this aggregate valuation was estimated to be $6.0 million. These tax revenues would typically be used by local and state governments for infrastructure improvements such as roads, schools, and health facilities, and to meet other needs of the community.

Entrega would acquire land for its pipeline through easement agreements with private landowners. Potential impacts on land values from construction of a new pipeline are highly site-specific. Permanent structures

could not be built over the pipeline, but existing land uses, such as livestock grazing, could continue as before. Our analysis concludes that there would be no disproportionate economic or public safety effects on minority or low-income communities because of EPP construction and operation.

Entrega would limit delays and damage to state and federal highways by boring beneath them. Smaller roads would be trenched, which would cause short-term delays. Construction of the EPP would utilize a variety of secondary roads. Use of these roads would be subject to weight restrictions. The roads acceptable for use, traffic management procedures, and the procedures for repairing BLM, county, and state roads are included in Entrega's Traffic and Transportation Management Plan.

Air Quality and Noise

Construction of the pipeline and aboveground facilities would generate short-term fugitive dust during clearing and grading activities, and along roadways. Entrega has committed to control fugitive dust using water and/or approved chemical dust suppressants. Entrega would install natural gas-fired compressors at three new compressor stations (two in Colorado, one in Wyoming). Entrega would acquire operating permits from Colorado and Wyoming from air quality permitting agencies, which may impose permit conditions to ensure that compressor station operations would meet air quality standards.

The three compressor stations would be located in rural locations. The nearest noise-sensitive area (NSA) to the Bighole and Wamsutter Compressor Stations would be over 1.5 miles away, and operation of these two stations would comply with the FERC 55 dBA standard. The Meeker Hub Compressor Station would be located about 2,000 feet from the nearest NSA, and the estimated noise attributable to compressor station operation would exceed the 55 dBA standard. We have recommended that Entrega design its compressor station to meet the 55 dBA standard, and then conduct noise measurements when operations begin to verify compliance.

Reliability and Safety

Entrega would comply with U.S. Department of Transportation pipeline materials and construction standards for natural gas pipelines. Where located in a utility corridor with other pipelines, the Entrega pipeline would be typically offset a minimum of 40 feet from adjacent pipelines, which greatly reduces the risk of pipeline damage from any repair activities on adjacent pipelines. After construction, Entrega must initiate a pipeline integrity management plan. As part of its plan, Entrega must identify High Consequence Areas (HCAs), which are typically residential areas, or areas where people congregate. Two potential HCAs were identified: the Rio Blanco Lake State Wildlife Area on the White River (MP 15.5), and the Wyoming State Penitentiary at Rawlins (MP 179.0). The portions of the pipeline located in HCAs would be inspected every seven years. The rate of public fatalities for the nationwide mix of transmission and gathering lines in service is 0.01 per year per 1,000 miles of pipeline. Using this rate, an EPP accident might cause a public fatality every 305+ years.

Cumulative Impacts

We identified existing and foreseeable projects that overlap, or could overlap with the EPP in time and space throughout the length of the pipeline. The major existing projects are one or more existing pipelines that the EPP would parallel over nearly the entire length of the pipeline. The major foreseeable projects are:

- EnCana's Meeker Pipeline and Gas Plant Project , located in Rio Blanco and Garfield Counties, Colorado; and

- Wyoming Interstate Company, Ltd.'s (WIC) Piceance Basin Expansion Project (PBEP), a 24-inch-diameter natural gas pipeline that would be constructed in the same pipeline corridor as the EPP over a distance of about 94 miles. The following are the primary cumulative impacts identified:

  1. Construction of the EPP would expand the width of existing pipeline corridors, particularly where the Entrega and WIC pipelines would be routed adjacent to one another or within the same existing pipeline corridor. There would be a corresponding expansion of wildlife habitat discontinuities in shrubland and woodlands, which may inhibit or limit wildlife movements, and increase predation rates on certain species, such as sage grouse.

  2. Construction of the proposed pipeline would coincide with construction of up to four EnCana pipelines over a 2.5-mile-long segment along Piceance Creek, which would result in short-term cumulative surface disturbance impacts to stream channels, wetlands, and irrigated pasturelands.

  3. The pipeline construction workforces for the EPP and PBEP could overlap between the Yampa River and Wamsutter during the summer and fall construction seasons of 2005, which could cause cumulative increases in short-term demand for temporary housing, and local congestion on secondary roads that would be used by both projects.

ALTERNATIVES CONSIDERED

We have considered the No Action or Postponed Action Alternative, which would deny or defer the proposed project. While these alternatives would eliminate the environmental impacts identified in this EIS, they would also deny U.S. markets access to the 1.5 Bcfd of natural gas which the EPP would transport.

We evaluated possible system alternatives including the use of other existing pipeline systems or the use of the WIC's proposed PBEP. Existing interstate natural gas pipelines that traverse the Piceance Basin are currently fully subscribed. No other existing pipeline system could be expanded without causing surface disturbance comparable to that resulting from construction of the EPP. Use of the PBEP as proposed would not meet Entrega's purpose and need because the pipeline would terminate at Wamsutter rather than continuing on to the Cheyenne Hub.

We also considered the option of combining the Entrega and WIC pipelines into a single pipeline. While requiring substantially less pipeline than the sum of the two proposed projects and result in less surface disturbance, this alternative would require far more compression (with resultant long-term air quality and

noise impacts for the life of the project). While attractive in concept, we concluded that the "one-pipe" alternative would present a number of challenges, and that melding the various factors and requirements (receipt points and pressures, delivery points and pressures, scheduling terms and conditions, etc.) of each individual system into a common system would be extremely difficult.

We evaluated the differences in environmental impacts if the PBEP route were substituted for the initial 33.2 miles of Entrega's pipeline (PBEP Route Alternative). This alternative would require construction of a 7-mile-long linking pipeline between Piceance Creek and the Greasewood Hub. Entrega's proposed pipeline would then follow the PBEP route to Entrega MP 33.2. We determined that pipeline construction along the PBEP route as compared to Entrega's proposed route would result in more overall surface disturbance because of the greater length of the PBEP, more disturbance in shrublands and woodlands that recover slowly, and more disturbance to big game and sage grouse winter ranges. However, following the PBEP route would not require any crossings of Piceance Creek and associated irrigated pastures and wetlands. **We are requesting additional public and agency input on the PBEP route alternative before making a routing recommendation in the Final EIS.**

As an extension of the PBEP route alternative analysis, we examined two alternatives for collocating the proposed Entrega and WIC projects in the same 150-foot-wide construction ROW between the origin of each project and Entrega MP 33.2 (Collocation Alternative – Danforth Hills South). One alternative would collocate both projects along the EPP route; the second alternative would collocate both projects along the PBEP route. Both alternatives would require construction of a 7-mile-long linking pipeline between the proposed Greasewood and existing Meeker Hub. We determined that collocation would reduce overall surface disturbance relative to constructing the two projects separately along the respective proposed routes. As described for the PBEP route alternative, we found that resource effects differed when the two collocation alternatives were compared. Following the EPP route along the Piceance Creek valley would result in multiple crossings of Piceance Creek, and a larger disturbance in irrigated pasture and haylands, which are expected to recover quickly. Constructing along the PBEP route would avoid impacts on Piceance Creek and the associated floodplain, but would remove much larger areas of shrublands and woodlands, which recover slowly. Use of the PBEP route would also affect a larger area of winter big game and sage grouse ranges. **Again, we are requesting additional public and agency input on the collocation alternatives before making a recommendation in the Final EIS.**

We also examined a collocation alternative north of the Yampa River, where we evaluated the extent to which long-term disturbance of sage grouse habitat could be reduced by collocating the two projects in the same 150-foot-wide ROW (Collocation Alternative – Danforth Hills North). We estimated that 254 less acres of sage grouse habitat would be disturbed if the two projects were collocated across 28 miles of sage grouse breeding and brooding habitat north of the Yampa River. The feasibility of this collocation alternative will be evaluated further and reported on in the Final EIS.

Three minor route variations (Pine Tree Gulch Variation, Park Meadows Variation, and Cheyenne Hub Variations) from Entrega's originally-proposed route were reviewed. Use of the Pine Tree Gulch Variation would avoid livestock water developments and productive grazing land along a stream drainage, which were issues raised by the affected landowner. Entrega has adopted this variation as its proposed route.

We determined that the Park Meadows Variation was not environmentally advantageous because the variation is longer (more surface disturbance), would be more difficult to revegetate, and, by deviating from the existing pipeline/utility corridor would create future land use constraints on an adjacent landowner.

Based on a landowner request, Entrega developed two Cheyenne Hub Variations (A and B). Variation A would terminate the EPP on the south side of the existing Cheyenne Compressor Station rather than the north side, as proposed. Variation B would parallel the proposed route and terminate on the north side of the existing compressor station, but at a slightly more southerly location compared to the proposed route. The primary considerations involve land ownership (private versus public); expansion of utility uses north of the Hub; new surface disturbance versus use of the existing pipeline corridor; and construction issues (the number of existing utilities that would be crossed by delivery laterals associated with the EPP). **We are requesting additional public and agency input on the Cheyenne Hub Variations before making a routing recommendation in the Final EIS.**

The possibility of relocating the Bighole Compressor Station was evaluated; however, no alternative site offered a clear environmental advantage over the proposed site. Consequently, no alternative site is recommended.

CONCLUSIONS

The conclusions and recommendations presented in this section are those of the FERC environmental staff. While our conclusions and recommendations were developed with input from the BLM as a cooperating agency, the BLM will present its own conclusions and recommendations in its ROD for the EPP.

Review of the information provided by Entrega and further developed from data requests; field investigations; scoping; literature research; alternatives analysis; and contacts with federal, state, and local agencies, and individual members of the public indicate that the proposed project would result in limited adverse environmental impact during construction and operation. We conclude that if the project were constructed and operated in accordance with applicable laws and regulations, Entrega's proposed mitigation, and additional mitigation recommendations, it would be an environmentally acceptable action. Although many factors were considered in this determination, the principal reasons are:

- 94 percent of the proposed pipeline would be located within 300 feet of existing pipeline, utility, and road ROWs. Where Entrega's proposed pipeline would parallel existing pipelines, it would generally be installed at a 40-foot offset from the nearest pipeline centerline;

- the project would be consistent with or in conformance with federal resource management plans;

- Entrega would implement a number of resource- or activity-specific plans, procedures, and agreements to protect natural resources, avoid or limit environmental impact, and promote restoration of all disturbed areas during construction and operation of the project;

- the use of the HDD method would avoid disturbances to the beds and banks of the White and Yampa Rivers;

- the appropriate consultations with the FWS, the SHPOs, the BLM, other affected land management agencies, and any appropriate compliance actions resulting from these consultations, would be completed before Entrega would be allowed to begin construction in any given area; and

- an environmental inspection program would be implemented to ensure compliance with all mitigation measures, Certificate conditions, and requirements contained in the POD.

In addition, we have developed specific mitigation measures (including a compliance monitoring program) to further reduce the environmental impact that would otherwise result from construction of the project. The additional studies or field investigations which we recommend typically result in site-specific mitigation and further reduction of impact; therefore, we are recommending that these mitigation measures be attached as conditions to any Certificate issued by the Commission.

INTRODUCTION

CHAPTER 1

1.0 INTRODUCTION

1.1 Background

On September 17, 2004, Entrega Gas Pipeline Inc. (a subsidiary of EnCana Oil and Gas USA) filed an application with the Federal Energy Regulatory Commission (FERC or Commission) in Docket No. CP04-413-000, et al., to construct, own, and operate a new natural gas transmission system in Colorado and Wyoming.[1] In its filing, Entrega Gas Pipeline Inc. (Entrega) seeks a Certificate of Public Convenience and Necessity (Certificate) under Section 7(c) of the Natural Gas Act (NGA) and Part 157 of the Commission's regulations. The Commission's environmental staff has prepared this draft environmental impact statement (EIS) to assess the environmental impact resulting from construction and operation of the facilities proposed by Entrega in accordance with the requirements of the National Environmental Policy Act (NEPA).

Entrega's proposal, referred to in this EIS as the Entrega Pipeline Project (EPP) would involve construction and operation of about 327.5 miles of 36- and 42-inch-diameter natural gas pipeline, 66,020 horsepower of compression at three new compressor stations, seven new meter stations, and related facilities. The pipeline would extend from the Piceance Basin (the "Meeker Hub") in Rio Blanco County, Colorado, northward to Wamsutter, Wyoming, and then proceed eastward roughly following Interstate 80 (I-80) past Rawlins, Laramie, and Cheyenne, Wyoming, to terminate at the Cheyenne Hub (near Rockport) in Weld County, Colorado (**figure 1.1-1**). Entrega proposes to transport up to 1.5 billion cubic feet per day (Bcfd) of Rocky Mountain region natural gas from the Meeker Hub Compressor Station to interconnections with two interstate transporters at Wamsutter and three interstate transporters at the Cheyenne Hub.[2] With these interconnections, the EPP could serve markets west of Wamsutter and large markets to the east or south of the Cheyenne Hub. By constructing a 42-inch-diameter segment between Wamsutter and the Cheyenne Hub, the EPP would provide additional capacity for volumes traveling either to mid-continent/eastern markets or westward.

Entrega proposes to begin project construction in the first half of 2005, with desired in-service dates of January 1, 2006, for the segment between the proposed Meeker Hub and Wamsutter Compressor Stations (about 136 miles) and April 2007 for the segment between Wamsutter and the proposed Cheyenne Hub Metering Station (about 191.5 miles).

1.2 Project Purpose and Need

The purpose of the EPP is to transport natural gas from supply basins in the central Rocky Mountains to interstate shippers at Wamsutter and the Cheyenne Hub who would carry the gas to markets in the Midwest

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[1] Entrega Gas Pipeline Inc. also requested in Docket Nos. CP04-414-000 and CP04-415-000 that the FERC grant certificates for blanket-type transportation of natural gas, and construction and operation of certain facilities under Parts 284 and 157 of the FERC's regulations, respectively. Under the FERC's regulations, these dockets qualify for categorical exclusions with no environmental analysis required (see Title 18 of the Code of Federal Regulations, Part 380).

[2] Entrega also proposed to interconnect with Public Service of Colorado (PSCo) at the Cheyenne Hub. PSCo is a local distribution company, which provides natural gas to the Denver regional market.



LEGEND

- Proposed Facility
- City or Town
- Proposed Pipeline
- Road
- County Boundary

Meeker Hub Station
- compressor station
- metering station
- pig launcher

Bighole Station
- compressor station
- pig launcher/receiver

Wamsutter Station
- compressor station
- metering station
- pig launcher/receiver

Arlington Station
- pig launcher/receiver

Cheyenne Hub Station
- metering station
- pig receiver

12.5 0 12.5 Miles

Entrega Pipeline Project

Figure 1.1-1

Project Overview

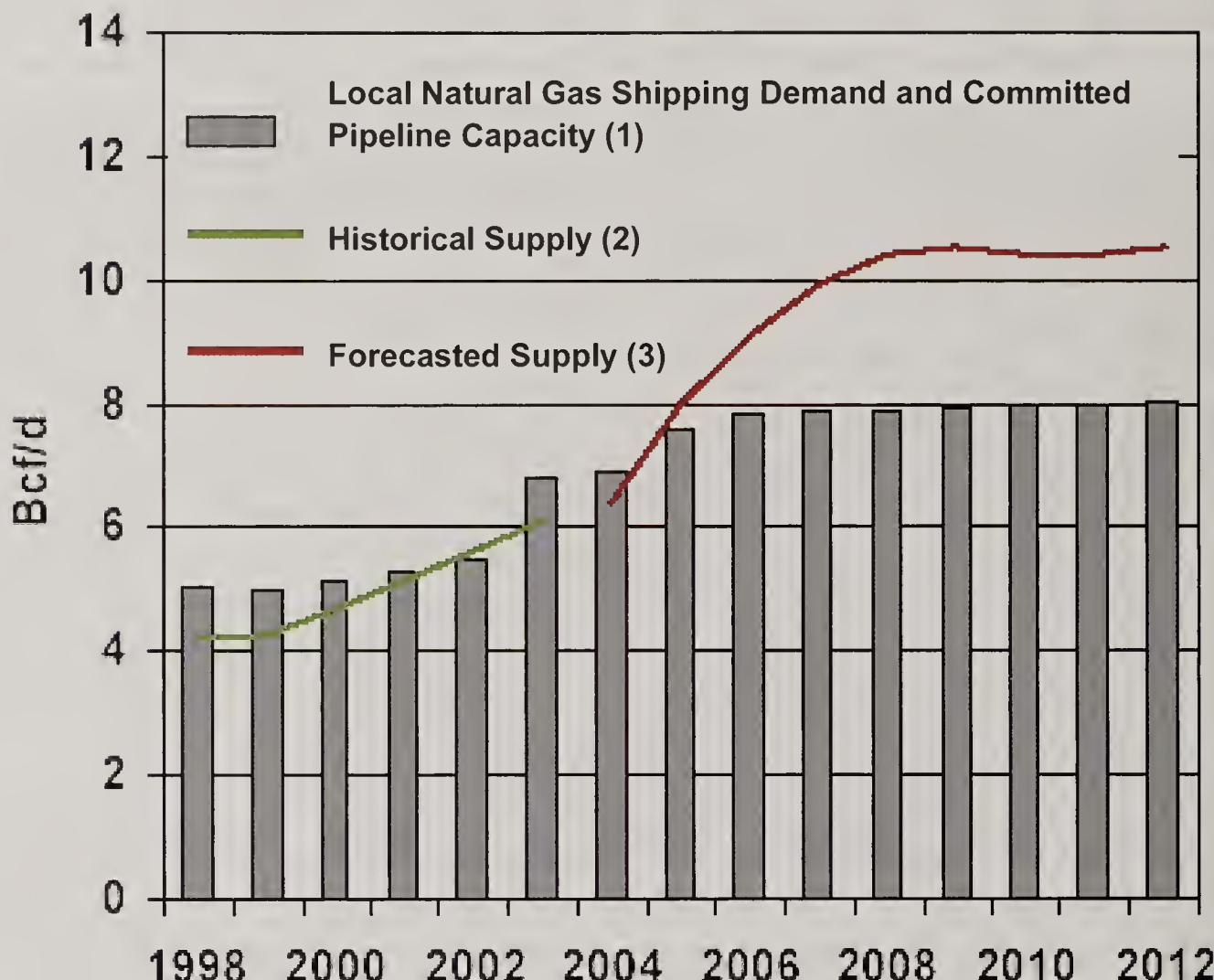
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and central United States (U.S.). The need for the project is dictated by an increasing natural gas supply (production) in the Rocky Mountain region without a concurrent increase in pipeline capacity to transport this gas to market. Rocky Mountain region (New Mexico, Colorado, Wyoming, Utah, Montana) gas production is predicted to increase from 3.3 trillion cubic feet per year (Tcfy) in 2002 to 4.6 Tcfy in 2010 and 6.3 Tcfy in 2025 (U.S. Department of Energy [DOE] 2004). This increase in production will offset declining production in other U.S. gas producing regions. Entrega forecasts that from 2004 to 2010, Rocky Mountain region production (not including the San Juan Basin) will increase by 3.7 Bcfd to 10.3 Bcfd. Pipeline exit capacity is not expected to match the increase in gas production over this time period. **Figure 1.2-1** illustrates Entrega's estimate of the relationship between the Rocky Mountain region gas supply increase and committed pipeline capacity. As shown, Entrega estimates that there will be a shortfall of pipeline capacity of more than 2 Bcfd after 2007.

Entrega's shipping customer, EnCana Marketing, would be supplying gas to the pipeline from the Uinta-Piceance Basin region of Rio Blanco, Garfield, and Mesa Counties, Colorado. The U.S. Geological Survey (USGS) (2002) assessed undiscovered conventional oil and gas and continuous (unconventional) oil and gas, including coal-bed gas within the Uinta-Piceance Basin. This assessment estimated that 21 trillion cubic feet of gas remains undiscovered. **Figure 1.2-2** illustrates recent annual gas production trends in Rio Blanco, Mesa, and Garfield Counties, where EnCana conducts the majority of its gas production and gathering in Colorado (Colorado Oil and Gas Commission 2004). The graphs indicate relatively flat production over the past 5 years in Rio Blanco and Mesa Counties, and strongly increasing production in Garfield County. Assuming that Entrega's initial transportation volume is 750 million cubic feet per day (MMcfd), the annual transported volume would be almost 274 billion cubic feet (Bcf). This volume represents about 143 percent of the total annual volume (192 Bcf) produced by these three counties in 2003. **Figure 1.2-2** also indicates that the fraction of the three-county production contributed by EnCana in 2003 was about 73 Bcf per year, or almost 27 percent of a 750-MMcfd shipping rate. This comparison suggests that production must substantially increase within the existing shipper's fields, and additional gas would be needed from other shippers to reach Entrega's maximum design transportation capacity of 1.5 Bcfd between the proposed Meeker Hub and Wamsutter Compressor Stations.

In a supplemental filing, Entrega identified several additional factors that support its assessment of an increasing production trend in the Piceance Basin including:

- the recent acquisition of Tom Brown Inc. (TBI), which greatly increased EnCana's production property holdings in western Colorado;
- EnCana's plan to reduce well spacing from one well per 20 acres to one well per 10 acres, using infill drilling;
- EnCana's average production in the Mamm Creek area (Garfield County) alone increased by about 75 MMcfd in the first half of 2004; and
- between May and October 2004, EnCana (including TBI) had an average of 20 drilling rigs per month in Garfield, Mesa, and Rio Blanco Counties, with an average mobilization and completion time of 20 days.



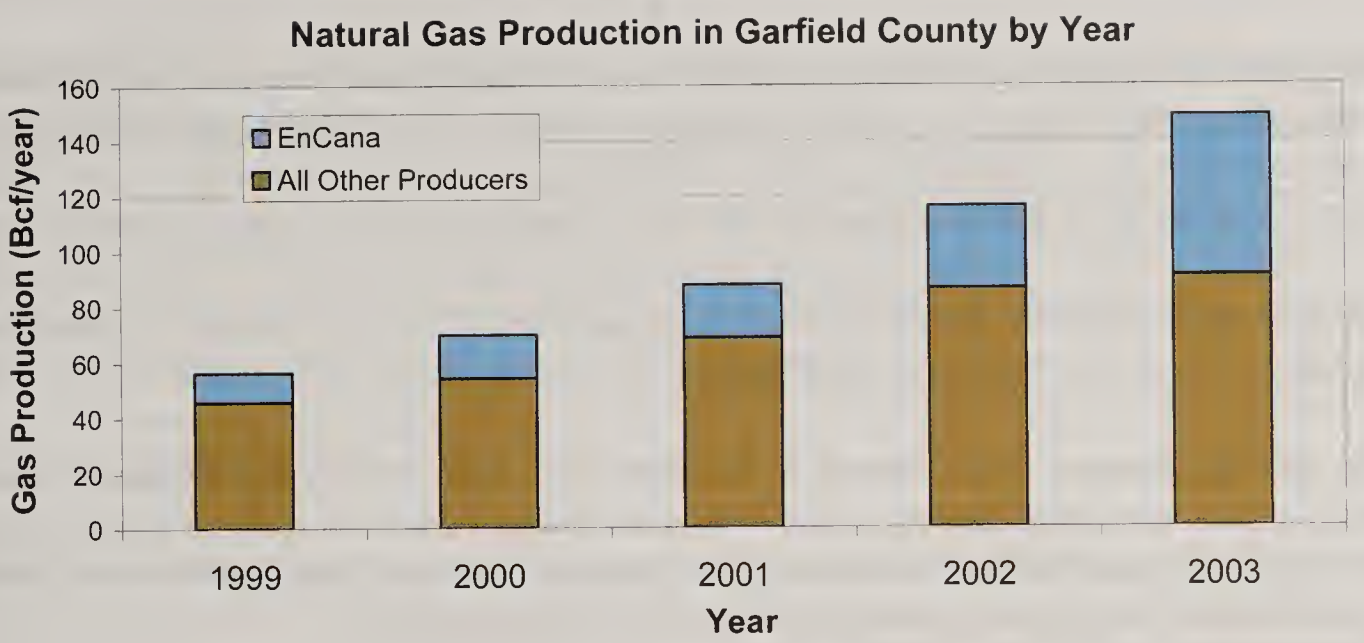
(1) Natural Gas Shipping Demand and Committed Pipeline Capacity – Historical demand from EIA; Committed pipeline capacity from EnCana Oil & Gas (USA) Inc.

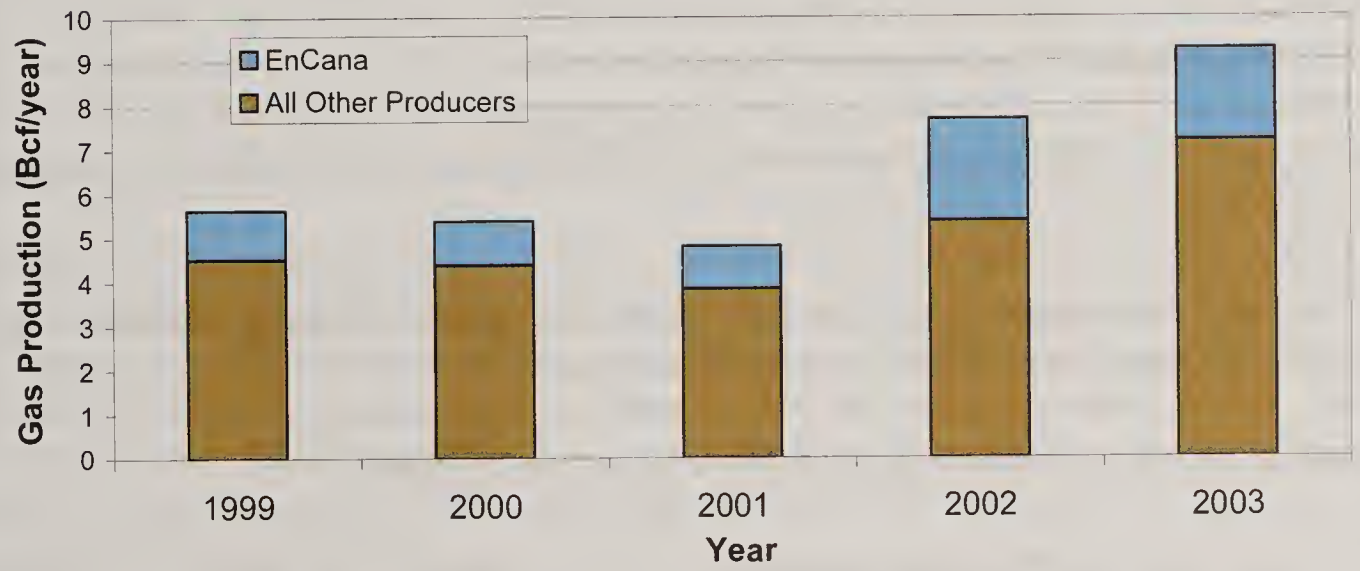
(2) Historical Supply – Wellhead Supply from Lippman Consulting Inc. (February 2004) and assumed 15.97% average gathering and processing fuel, loss and shrinkage.

(3) Forecasted Supply from PACE Global Energy Services – Wyoming Pipeline Study (February 2003).

Source: Entrega, FERC Application, Exhibit H.

Figure 1.2-1 **Rockies Natural Gas Supply vs. Local Natural Gas Shipping Demand and Committed Pipeline Capacity**





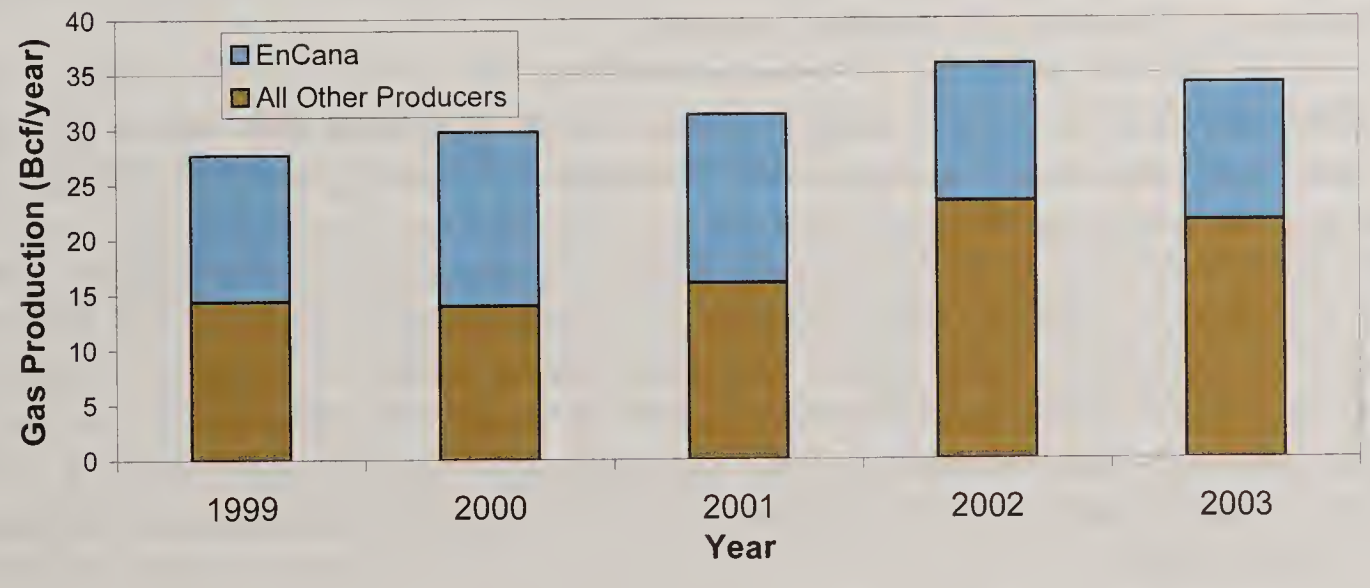


Figure 1.2-2 **Natural Gas Production in Garfield, Mesa, and Rio Blanco Counties, Colorado, from 1999 through 2003; and the Relative Contribution from EnCana Oil and Gas, USA**

Beyond factors related to its shipping customer, Entrega noted that there also is significant potential for increased gas production by third parties in the region. In particular, Entrega reported that:

- in October 2004, 44 drilling rigs were working for all producers in the three-county area; and
- about 10,000 new wells are projected to be drilled in the three-county area over the next decade, with additional production totaling about 3 Bcfd.

Overall, Entrega believes these factors demonstrate that production in the Piceance Basin will outstrip regional pipeline take-away capacity in the immediate future. When one considers the Piceance and other supply basins that could deliver into the pipeline, Entrega concludes that production will easily yield more than sufficient gas to support a pipeline of the proposed size and scope.

1.3 Purpose and Scope of this Document

The principal purposes for preparing an EIS are to:

- identify and assess potential impact on the natural and human environment that would result from the implementation of the proposed action;
- identify and recommend reasonable alternatives and specific mitigation measures, as necessary, to avoid or minimize project-related environmental impact; and
- facilitate public involvement in the environmental review process.

This EIS focuses on facilities that are under the FERC's jurisdiction, i.e., about 327.5 miles of natural gas pipeline, three compressor stations, and related ancillary facilities. The scope of the analysis of those facilities not under the jurisdiction of the FERC (e.g., facilities related to development, production, gathering, and processing of natural gas) is described in section 1.5.

The topics addressed in this EIS include geology (including hazards and mineral and paleontological resources); soils; groundwater; surface waters (including water quality); wetlands; vegetation; wildlife and aquatic species; special status species; land use (including agricultural resources); transportation; recreation and special interest areas (including Areas of Critical Environmental Concern [ACECs], Wild and Scenic Rivers, and Wilderness Areas); visual resources; socioeconomics (including population, housing, and public services); environmental justice; cultural resources; Native American concerns; air quality and noise; reliability and safety; cumulative impacts; and alternatives. The EIS describes the affected environment as it currently exists, discusses the environmental consequences of the proposed project, and compares the project's potential impact to that of alternatives. The EIS also presents recommended mitigation measures and our[3] conclusions.

[3] "We," "us," and "our" refer to the environmental staff of the Commission's Office of Energy Projects. Unless specifically identified otherwise, the recommendations and conclusions presented in this EIS are those of the FERC Staff.

The FERC is the "lead federal agency" for preparation of this EIS. This effort was undertaken with the participation and assistance of the U.S. Department of the Interior's Bureau of Land Management (BLM), which acted as a "cooperating agency" under NEPA. The EIS will provide a basis for coordinated federal agency decision-making in a single document, avoiding duplication between federal processes. In addition to the lead and cooperating agency, other federal, state, and local agencies will use the EIS in approving or issuing permits or approvals for all or part of the proposed project. Federal, state, and local permits, approvals, and consultations for the project are discussed in section 1.4.

1.3.1 FERC

The FERC is the federal agency responsible for regulating the transportation of natural gas in interstate commerce. Under the NGA, the FERC determines whether interstate natural gas facilities are in the public interest and, if so, grants a Certificate for their construction and operation. As part of this determination, the FERC will consider the findings presented in this EIS as well as non-environmental issues in its review of Entrega's application. The FERC will authorize the construction and operation of the proposed facilities only if it finds that the evidence produced on technical competence, financing, rates, market demand, gas supply, existing facilities and service, environmental impacts, long-term feasibility, and other issues demonstrates that the project is, or will be, required by the public convenience and necessity.

Environmental impact assessment and mitigation development are important factors in the overall public interest determination. Under NEPA, the FERC has a responsibility to consider the potential environmental impacts associated with proposals which come before it. This EIS has been prepared to fulfill that responsibility for Entrega's proposal, in compliance with the requirements of NEPA, the Council on Environmental Quality (CEQ) regulations for implementing the procedural provisions of NEPA (Title 40 of the Code of Federal Regulations, Parts 1500-1508 [40 CFR 1500-1508]), and the FERC's regulations for implementing NEPA (18 CFR 380).

1.3.2 BLM

Entrega's proposal crosses federal lands managed by the BLM. Because the BLM must comply with the requirements of NEPA before granting rights-of-way (ROWs) across lands under its management, the BLM has elected to cooperate with the FERC in preparing this EIS.

As a cooperating agency, the BLM proposes to adopt this EIS per 40 CFR 1506.3 to meet its responsibilities under NEPA in considering Entrega's application for a ROW grant, which was submitted to the BLM's Rawlins, Wyoming, Field Office (FO) on October 28, 2003. Under section 185(f) of the Mineral Leasing Act of 1920 (MLA), the BLM has the authority to issue ROW grants for all affected federal lands. This action would be in accordance with 43 CFR 2800 and 2880, subsequent 2800 and 2880 Manuals, and Handbook 2801-1. For the EPP, the BLM would consider the issuance of a new ROW grant and issuance of associated temporary use permits that would apply to BLM-managed lands crossed by the project. The BLM also would consider conformance with land use plans and impacts on resources and programs in determining whether to issue a ROW grant. The BLM's decision will be documented in a project Record of

Decision (ROD) prepared by the BLM. The BLM will consider FERC approval or denial of Entrega's proposal before issuing or denying a ROW grant for the proposed project.

The primary decisions to be addressed and made by the BLM include:

- Shall a ROW grant that includes mitigation and monitoring requirements be issued for a permanent pipeline ROW that will support pipeline construction and operation on federal lands?

- Shall Temporary Use Permits be granted for roads and temporary work areas needed for project construction on federal lands?

Should the BLM decide to approve the EPP, it will issue a ROW grant that would allow construction. ROW grants typically include standard agency stipulations, conditions imposed on the project as the result of the NEPA review, and a complete Plan of Development (POD).

1.4 Public Review and Comment

On March 19, 2004, the FERC approved Entrega's request to use the NEPA Pre-Filing Process for the proposed EPP and established Docket No. PF04-7-000 to place information filed by Entrega and documents issued by the Commission into the public record.[4] The intent of the NEPA Pre-Filing Process is to initiate environmental review activities early in the project planning process. Starting our environmental review before an application is formally filed with the Commission enables early involvement by the public, governmental agencies, and other interested parties while the project is still being designed. In this manner, we can identify environmental issues early in the process and facilitate resolution among the stakeholders.

As part of the NEPA Pre-Filing Process, Entrega mailed letters to landowners, government officials, and the general public informing them about the project and inviting them to attend open houses to learn about the project and ask questions. The open houses were held in Greeley, Colorado (March 29, 2004); Cheyenne, Wyoming (March 30, 2004); Laramie, Wyoming (March 31, 2004); Rawlins, Wyoming (April 1, 2004); Wamsutter, Wyoming (April 6, 2004); Craig, Colorado (April 7, 2004), and Meeker, Colorado (April 7, 2004). Representatives of the FERC and the BLM attended these meetings.

On May 3, 2004, the FERC issued a *Notice of Intent to Prepare an Environmental Impact Statement for the Planned Entrega Gas Pipeline Project, Request for Comments on Environmental Issues, and Notice of Public Scoping Meetings and Route Inspection* (NOI). This document briefly described the project components, invited written comments from the public on the proposal, and listed the date and location of four public scoping meetings to be held in communities along the route. The NOI was sent to about 1,670 entities on a mailing list that included the landowners crossed and/or adjacent to the proposed ROW; federal and state agencies; Native American tribes; non-governmental and environmental organizations; libraries; the media; and other potentially interested parties.

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[4] Entrega's PF Docket was closed on September 17, 2004, when Entrega filed its application with the Commission. On that date, a new docket number (CP04-413-000, et al.) was assigned to Entrega.

We invited other federal agencies with jurisdiction and special expertise to be cooperating agencies during the project review. The BLM requested and received cooperating agency status. As part of this effort, we invited the U.S. Fish and Wildlife Service (FWS) and the U.S. Army Corps of Engineers (COE) to cooperate because of their responsibilities under the Endangered Species Act (ESA) and the Clean Water Act (CWA), respectively.

We held public scoping meetings in Cheyenne (June 7, 2004), Rawlins (June 8, 2004), Craig (June 9, 2004), and Meeker (June 10, 2004). These meetings were announced in the NOI and in local area newspapers. Transcripts of the public scoping meetings are part of the public record and are available for viewing at the FERC website for the Entrega docket.[5]

During the same time period, we organized and conducted separate "agency" scoping meetings with federal and state agency representatives, and local officials to solicit input and coordinate our review of the proposed project. These meetings were held in Rawlins (June 8, 2004), Craig (June 9, 2004), and Meeker (June 10, 2004). A summary of the issues discussed was made part of the public record and posted on the FERC website.

In addition to oral and written comments received during agency and public scoping meetings, the Commission received written comments during and after the close of the public scoping period (June 15, 2004). In total, 32 written correspondences[6] containing project comments were received from 28 parties, including items from federal, state, and local government agencies; landowners; and environmental groups. Each letter was evaluated and comments were divided into issue groups. When written comments were combined with oral meeting comments, 166 individual comments were received. Many of these comments addressed the same environmental issues. Of the comments received, about one-third were non-environmental in nature (project need, easement acquisition, compensation, and general statements of support or opposition). **Table 1.4-1** lists the environmental issues and concerns identified by commentors during the scoping process.

1.5 Nonjurisdictional Facilities

1.5.1 Background

Under Section 7 of the NGA, the FERC is required to consider, as part of its decision to authorize interstate natural gas facilities, all factors bearing on the public convenience and necessity. The facilities for the EPP that would be under the FERC's jurisdiction include approximately 327.5 miles of natural gas pipeline, 3 compressor stations, 7 interconnections with existing pipelines, 22 mainline valves, and 4 pig launcher/receivers.[7] These facilities are discussed in detail in section 2.1. In the future, Entrega may identify

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[5] Public meeting transcripts and a summary of the issues discussed during agency scoping meetings are available for viewing on the FERC Internet website (http://www.ferc.gov). Using the "eLibrary" link, select "General Search" from the eLibrary menu, enter the selected date range and "Docket No." (CP04-413-000), and follow the instructions. (For assistance, call 1-866-208-3676 or e-mail FercOnlineSupport@ferc.gov.)

[6] Written correspondences included letters, Return Mailers (attached to our NOI), and electronic mail. The Commission also received one Congressional correspondence.

[7] A pipeline "pig" is a device used to clean or inspect the pipeline. A pig launcher/receiver is an aboveground facility where pigs are inserted or retrieved from the pipeline.

Table 1.4-1
Issues Identified and Comments Received
During the Public Scoping Process for
the Entrega Pipeline Project

Purpose and Need
- Sources and suppliers of natural gas for the project.
- Existing regional pipeline transportation capacities.

NEPA Process
- Pipeline and ancillary facilities to be included in the EIS analysis.
- Consideration of a single EIS for Entrega and Wyoming Interstate Company, Ltd. (WIC) Pipeline projects.
- Completion of the BLM Rawlins FO Resource Management Plan (RMP) prior to making ROW decisions for the EPP.
- Jurisdiction for gathering pipelines that provide gas for the EPP.

Geology
- Potential landslide risk on steep slopes.
- Potential pipe exposure at incised channel crossings.

Soils and Noxious Weeds
- Soil loss from wind and water erosion.
- Long-term loss of grazing resources caused by inappropriate revegetation species selection, weed invasion, and difficult reclamation conditions (e.g., alkaline soils).
- Spread of noxious and invasive weeds in excavated soils.
- Loss of vegetation productivity from soil mixing and compaction.
- Restoration and monitoring of the ROW to original contour.

Water
- Potential loss of water yield from shallow groundwater resources (springs).
- Increased sedimentation at river and stream crossings and irrigation ditches.
- Depletion of surface water sources used for dust control and hydrostatic testing (Platte River and Colorado River systems).
- Potential reduction in water quality at hydrostatic test water discharge locations.
- Identification and protection of municipal water supplies and aquifers.
- Storage of hazardous materials at refueling sites.

Vegetation
- Long-term loss of native species and structural diversity in areas with high wildlife habitat values (sagebrush communities, mountain shrublands, riparian areas, hay meadows along Piceance Creek).

Fish and Wildlife
- Potential loss of wildlife individuals and reproductive success because of human activity, construction surface disturbance, and compressor station operational noise during critical periods of the year. Primary species of concern: big game, migratory birds (including raptors).
- Potential loss of fish individuals and reproductive success because of construction disturbance in waterways during critical periods of the year. Primary species of concern: trout in the Platte River, Medicine Bow River, and Rock Creek.
- Increased habitat fragmentation from expansion of surface disturbance caused by existing and new pipeline ROWs, and indirect effects (increased human activity, noise).

Special Status Species
- Potential loss of wildlife species individuals and reproductive success because of human activity, construction surface disturbance, and compressor station operational noise during critical periods of the year. Primary species of concern: Preble's meadow jumping mouse, Wyoming toad, bald eagle,

Table 1.4-1 (Continued)

and other special status raptors, sage grouse, prairie dog colonies and associated species, other BLM special status species.

- Potential loss of fish individuals and reproductive success because of construction disturbance in waterways during critical periods of the year. Primary species of concern: native Colorado River system fish.
- Depletion effects on surface water regimes and habitats for downstream listed species (Platte River system).
- Potential loss of plant species individuals and reproductive success because of construction surface disturbance. Primary species of concern: Dudley Bluffs twinpod, Dudley Bluffs bladderpod, Ute ladies'-tresses orchid, Colorado butterfly plant, BLM special status plants.
- Potential natural gas or condensate leaks and impacts on fish.

Land Use, Recreation, and Visual Resources

- Loss or delay of agricultural production and potential interference with livestock management, including fence and irrigation system repairs.
- Construction noise, human activity, and surface disturbance near residential areas and farms.
- Effects of heavy loads on county and private roads, and plans for repair.
- Visual impacts from new pipeline surface disturbance and aboveground ancillary facilities on nearby residential areas and Key Observation Points (KOPs).
- Increased public access to public and private lands from new road construction.
- Potential conflicts between big game hunting and pipeline construction.
- Potential conflicts between recreational boating on the North Platte River and pipeline construction.
- Potential for precluded future land uses.
- Decommisioning plans for temporary access roads.
- Protection measures for unique or sensitive areas.

Cultural Resources

- Consultation with potentially affected Native American tribes.
- Identification and protection of cultural resources in and near construction areas.
- Identification and protection of traditional cultural properties in the area.
- Identification and protection of the Overland and other National Historic Trails.

Socioeconomics

- Potential reductions in property value and changes in future use because of a new pipeline.
- Adequacy of temporary housing and camp sites during construction.
- Short- and long-term fiscal benefits and costs to local communities and counties.
- Carpooling or busing crews to work sites.
- Limited emergency medical and fire fighting capabilities in Rio Blanco County, Colorado.

Air and Noise

- Increased fugitive dust generation and need for control on access roads.
- Compressor station combustion emissions compliance with air quality standards.
- Compressor station noise impacts on nearby residences, and potential mitigation.

Public Safety

- Proximity of adjacent pipelines.
- Construction practices around electrical transmission lines.
- Ensure pipe strength sufficient for heavy vehicles.
- Properly mark the location and ownership of underground utilities.
- Electrical grounding of the pipeline.

Cumulative Impacts

- Growth induced by increase in local pipeline capacity.
- Relationship to other oil and gas development activities.

Table 1.4-1 (Continued)

- Inclusion of WIC's proposed Piceance Basin Expansion pipeline and its associated facilities.
- Disruption and loss of agricultural production from two pipelines (Entrega, WIC) constructed sequentially.
- Cumulative impacts from multiple pipelines in nearby, but not abutting, ROWs.
- Cumulative pipeline impacts (surface disturbance, restoration, and precluded land use) on nearby landowners.
- Cumulative impacts on wildlife and their habitats.
- Conversion plans for the existing soda ash pipelines.

Alternatives

- Single pipeline for WIC and Entrega where the two projects overlap.
- Construction of WIC and Entrega pipelines within a single, common ROW.
- Simultaneous construction and restoration of WIC and Entrega pipelines.
- Construction of Entrega pipeline in an alternative pipeline corridor between the Meeker Hub Compressor Station and EPP MP 33.2.

additional metering facilities or receipt/delivery laterals under the FERC's jurisdiction to connect its system to new supply sources or shipper delivery points.[8]

Occasionally, proposed natural gas pipeline projects have associated facilities that do not come under FERC jurisdiction. These "nonjurisdictional" facilities may be integral to the need for the proposed project (e.g., a new or expanded power plant at the end of a FERC-jurisdictional pipeline) or they may be merely associated as a minor, non-integral component of the jurisdictional facilities that would be constructed and operated as a result of the proposed facilities.

Nonjurisdictional facilities associated with the EPP are existing and proposed natural gas development, production, gathering, and processing facilities that have been or would be constructed and operated by EnCana Gathering Services (EnCana) or other producers in the basin. These facilities are located upstream (i.e., prior to the origin) of the proposed Entrega Pipeline, which begins at a proposed "Meeker Hub" along Piceance Creek in Rio Blanco County, Colorado. **Table 1.5-1** lists currently identified nonjurisdictional facilities that are associated with the EPP and the status of their environmental review.

On July 22, 2004, EnCana filed an Application for Transportation and Utility Systems and Facilities on Federal Lands (#COC67979) with the BLM's White River FO to construct and operate the majority of the nonjurisdictional facilities listed in **table 1.5-1**. This application has undergone numerous revisions, and a final application was presented to the BLM in January 2005.

All the proposed gathering, treated gas, and natural gas liquids pipelines included in EnCana's BLM application would be connected at a proposed gas plant to be constructed at the existing American Soda plant site, about 4 miles north-northwest of the proposed Meeker Hub. **Figure 1.5-1** illustrates EnCana's currently proposed project. The BLM is preparing an environmental review of these "upstream" facilities in a separate document.

We carefully considered the relationship between these upstream nonjurisdictional facilities and the EPP. Although most of these facilities would be functionally attached to the Entrega Pipeline, we have concluded that these facilities do not represent actions that must be addressed at the same level of detail as the EPP in this EIS. Part of our decision on the appropriate scope of analysis is based on the CEQ's "connected action" criteria (40 CFR 1508.25, Scope).

1. Connected actions "automatically trigger other actions which may require environmental impact statements." As indicated in the Project Purpose and Need section, there has been a substantial increase in natural gas drilling activity in the Piceance–Uinta Basin. These drilling activities are authorized by BLM approvals of Applications for Permits to Drill with the required Environmental Assessments (EAs) and RODs. We anticipate that this same permitting process will be used by the BLM to approve future expansions of natural gas supplies in this geologic basin. We do not see that the BLM's regulatory actions have, or will, automatically trigger FERC actions, or vice versa. Each agency's action is taken pursuant to its own underlying authority, and those authorities are independent.

[8] These facilities could be added using the Blanket Certificate which Entrega has requested in Docket No. CP04-415-000.

Table 1.5-1
Nonjurisdictional Facilities Related to the Entrega Pipeline Project

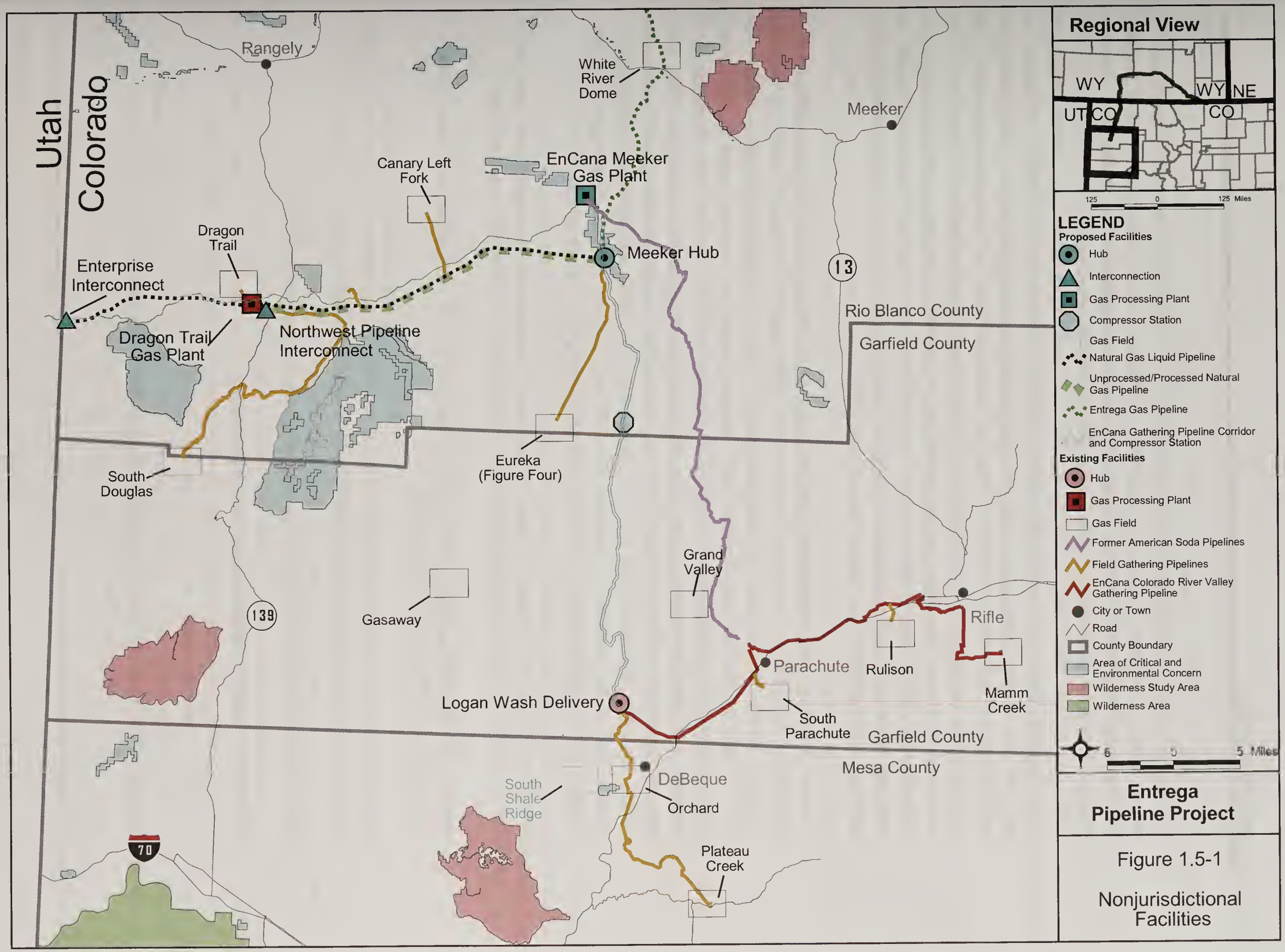
Facility (see figure 1.5-1)	Status	Location	Interconnections	Facility Description	Environmental Review Status
EnCana Natural Gas Fields: Mamm Creek, Rulison, South Parachute, Plateau Creek, Orchard, Grand Valley, South Douglas, Dragon Trail, Canary Left Fork, Gasaway, White River Dome	Existing	Mesa, Garfield, Rio Blanco Counties, Colorado	Multiple small diameter interconnecting pipelines with larger diameter (24-inch) gathering trunklines that feed gas to existing gas plants.	Natural gas wells on variable spacing (20, 40, 80 acres) that are connected to gathering pipelines.	Wells individually approved on a site-specific basis by the BLM on federal, state, and private lands with federal ownership of oil and gas rights. Wells individually approved on State and private lands under Colorado Oil and Gas Commission requirements where oil and gas rights are state or privately held.
South Shale Ridge Lease Area	Proposed	Mesa County, Colorado	Gas gathering and produced water pipelines to existing gathering pipelines near DeBeque.	Natural gas wells (20) to be drilled over a 20-year period.	Evaluated in a BLM Grand Junction FO environmental assessment (EA) (2004); final approvals pending.
EnCana Eureka (Figure Four) Natural Gas Field	Proposed	Garfield, Rio Blanco Counties, Colorado	Gas gathering and produced water pipelines from field to Meeker Gas Plant.	Natural gas wells on variable spacing (40, 80 acres) that are connected to gathering pipelines.	Evaluated in a BLM White River FO EA (2004); final approvals pending.
EnCana Meeker Gas Plant	Proposed	Rio Blanco County, Colorado	Multiple interconnections with gathering pipelines; one natural gas export pipeline (Entrega); and one natural gas liquids pipeline (interconnection with the Enterprise natural gas liquids pipeline system).	The plant would be located on a 40 to 80 acre site (former American Soda mine). This facility would receive unprocessed gas from the gathering system, separate the associated natural gas liquids and water, and deliver sales quality gas and natural gas liquids to interstate pipeline systems. Separated water would	ROW application filed with the BLM (2005); EA being prepared.

Table 1.5-1 (Continued)

Facility (see figure 1.5-1)	Status	Location	Interconnections	Facility Description	Environmental Review Status
				be injected into an approved deep geologic formation, or evaporated in ponds.	
EnCana Natural Gas Gathering and Produced Water Pipelines (Former American Soda Pipelines)	Existing	Garfield and Rio Blanco Counties, Colorado	Former American Soda plant site to former American Soda mine site (recently purchased by EnCana).	Two 12-inch-diameter 35-mile-long water pipelines that would be converted to natural gas and produced water delivery service.	Pipeline construction effects analyzed in conjunction with the soda ash project.
EnCana Colorado River Valley Natural Gas Gathering Pipeline	Existing	Garfield County, Colorado	Connects gas fields south of Rifle (e.g. Mamm Creek) with Logan Wash Delivery near DeBeque.	Approximately 16 miles of recently completed 24-inch-diameter pipeline that interconnects with multiple fields in the Colorado River and Plateau Creek valleys.	All federal, state, and local approvals received, and project constructed in 2004.
EnCana Multiple Pipeline Corridor and Compressor Station)	Proposed	Garfield and Rio Blanco Counties, Colorado	Logan Wash Delivery (near DeBeque) to Meeker Gas Plant.	Multiple pipelines: • 44.5-mile-long 30-inch-diameter unprocessed natural gas pipeline; • 44.5-mile-long 10-inch-diameter natural gas liquids pipeline; • 11.1-mile-long 16-inch-diameter unprocessed natural gas pipeline; • 20.2-mile-long 12-inch-diameter water or natural gas pipeline; • 0.9-mile-long corridor to interconnect 12-inch-diameter gas/water pipeline; and 16-inch-diameter gas pipeline to Hunter Creek Compressor Station. Compressor Station (20.2 miles south of Meeker Gas Plant): • Compression for unprocessed gas pipelines.	ROW application filed with the BLM White River FO (2005), EA being prepared.

Table 1.5-1 (Continued)

Facility (see figure 1.5-1)	Status	Location	Interconnections	Facility Description	Environmental Review Status
EnCana Un-processed/ Processed Natural Gas Pipeline	Proposed	Rio Blanco County, Colorado	Dragon Trail Gas Plant to Meeker Gas Plant	31.2-mile-long 16-inch-diameter pipeline would deliver unprocessed gas to the Meeker Gas Plant from Dragon Trail. The proposed pipeline would also interconnect with Northwest Pipeline (NWPL) near Dragon Trail to alternatively flow processed gas from the proposed Meeker Gas Plant to NWPL, depending on market conditions and as a contingency.	ROW application filed with the BLM White River FO (2005); EA being prepared.
EnCana Natural Gas Liquids Pipeline	Proposed	Uintah County, Utah, and Rio Blanco County, Colorado	Meeker Gas Plant to Enterprise Pipeline System	47.8-mile-long 12-inch-diameter pipeline to transport natural gas liquids from Meeker Gas Plant to interstate Enterprise pipeline. To be built in same ROW as Dragon Trail to Meeker Gas Plant facilities.	ROW application filed with the BLM White River FO (2005); EA being prepared.
Entrega electrical power supply line	Proposed	Meeker Compressor Station, Rio Blanco County, Colorado	Existing White River Electric Association distribution line to compressor station site.	0.2 mile of 3-phase 25-kV line and single-phase transformation. Future system expansion would require conversion of single-phase transformer to three-phase transformer.	Included in this EIS.
Entrega electrical power supply line	Proposed	Wamsutter Compressor Station, Sweetwater County, Wyoming	Existing Pacific Power distribution line to compressor station site.	One mile of 3-phase 34.5-kV line and single-phase transformation. Future system expansion would require conversion of single-phase transformer to three-phase transformer.	Included in this EIS.
Entrega electrical power supply line	Proposed	Cheyenne Hub Metering Station, Weld County, Colorado	Existing Poudre Valley Electric Association distribution line to site.	0.25 mile of single-phase 7.2-kV line and single-phase transformer.	Included in this EIS.



Entrega Pipeline Project

Figure 1.5-1

Nonjurisdictional Facilities

2/7/05

2. Connected actions "cannot or will not proceed unless other actions are taken previously or simultaneously." EnCana has proposed establishing a "Meeker Hub" on the Piceance Creek precisely because there are existing interstate natural gas pipelines available at that location (e.g., Questar Pipeline Company [Questar], TransColorado Gas Transmission Company [TransColorado], and Colorado Interstate Gas Company [CIG]), which could accept its processed gas. Because there are other interstate pipeline options available, EnCana's proposal could go forward without construction of the EPP. We interpret Entrega's proposal as a response to an ongoing increase in the natural gas development and supply by its affiliate and other gas developers that must be conveyed to market. The EPP is timed to address projected shortfalls in pipeline capacity. Entrega has clearly stated that it does not expect its system capacity to be fully utilized upon completion of pipeline construction, and that other sources of gas beyond that from the Piceance-Uinta Basin may be transported through its proposed facilities. Thus, EnCana will proceed with its production, gathering, and treatment facilities whether or not the FERC takes action to approve the EPP.

3. Connected actions "are interdependent parts of a larger action and depend on the larger action for their justification." As discussed previously, the Entrega Pipeline would be functionally related to EnCana's upstream development as presently proposed. However, given the existing pipeline infrastructure that is not owned by EnCana and intersects with Entrega's origin, the proposed pipeline could easily provide regional gas transportation service if EnCana's upstream facilities were not constructed. However, it is likely that Entrega would have to acquire additional gas in the short term from other sources to justify the EPP. If EnCana's upstream development could not connect with the Entrega Pipeline, then EnCana would have to reach agreements with another interstate gas transporter(s) to move its gas in the short term. Therefore, the EPP and EnCana's proposed development do not display the tight interdependency necessary to be considered part of a larger single action.

In addition, the FERC has adopted a four-factor procedure to determine the appropriate scope of its environmental review when project-related nonjurisdictional facilities are involved. These factors are:

- whether the regulated activity compromises "merely a link" in a corridor-type project (e.g., a transportation or utility transmission project);

- whether there are aspects of the nonjurisdictional facility in the immediate vicinity of the regulated activity that affect the location and configuration of the regulated activity;

- the extent to which the entire project would be within the FERC jurisdiction; and

- the extent of cumulative federal control and responsibility.

1.5.2 Conclusions

After applying the four-factor procedure to the EPP, we conclude the following:

- the FERC's control and responsibility is not sufficient to extend its environmental review to include the associated nonjurisdictional facilities proposed by EnCana and others;

- environmental review of the upstream EnCana facilities is already being conducted by another federal agency and it would be duplicative to include an environmental review of those facilities in this EIS; and

- the powerlines that would be constructed by local electrical service companies and cooperatives to Entrega's compressor stations are addressed in this EIS (see **table 1.5-1**).

In a broader context, we see the relationship between upstream development and "downstream" pipeline transportation as discontinuous from a NEPA processing perspective. The upstream development proposals are not currently as mature as the downstream Entrega Pipeline proposal. We expect that the upstream system may change further as relationships among producers and gas gatherers/processors are solidified and the gas supply volumes to be shipped are better estimated. We believe the most reasonable approach for addressing the upstream facilities is to fully inform the public about the proposed nonjurisdictional facilities and discuss their locations and functions to the extent these facts are known.

1.6 Related Actions

On March 26, 2004, the Wyoming Interstate Company, Ltd. (WIC) filed an application with the BLM Rawlins FO to construct and operate a new interstate natural gas pipeline and related facilities that would begin at the Greasewood Hub (about 7 miles east of the proposed Meeker Hub) and extend northward. These facilities would include:

- about 142 miles of 24-inch-diameter natural gas pipeline, extending between CIG's existing Greasewood Compressor Station in Rio Blanco County, Colorado, and an interconnection with the CIG and WIC interstate pipeline systems at CIG's existing Wamsutter Compressor Station in Sweetwater County, Wyoming;

- one 1,650-horsepower compressor, to be installed at the Greasewood Compressor Station; and

- related appurtenant facilities.

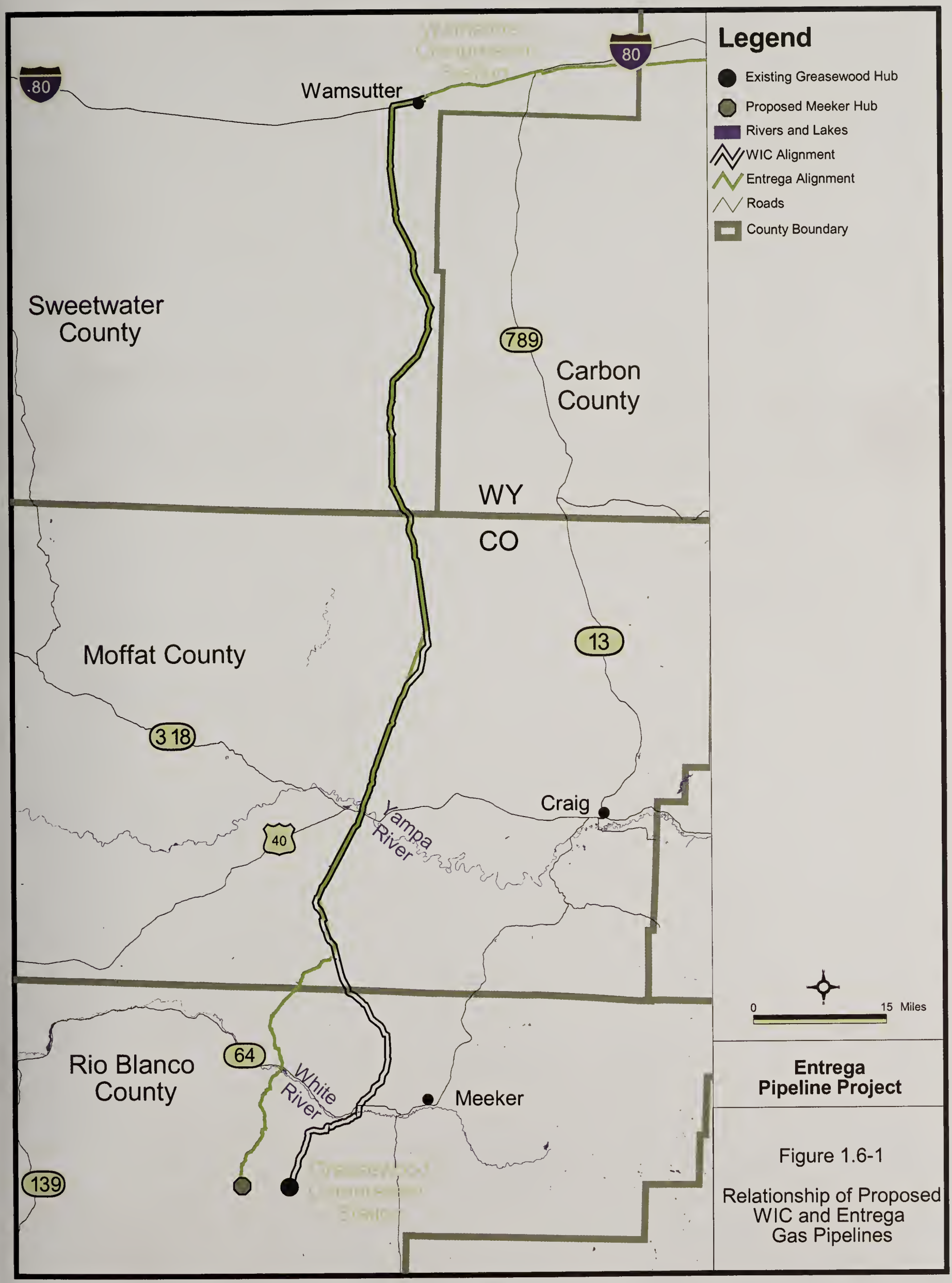
The proposed Piceance Basin Expansion Project (PBEP) pipeline alignment would parallel an existing PSCo pipeline from Greasewood Compressor Station to the White River Valley and then an existing electrical transmission line to a point immediately west of Meeker. The pipeline would be constructed in a new ROW with no adjacent utilities over a distance of about 17 miles between Meeker and Deep Channel Creek, where it would join an existing pipeline utility corridor that currently contains CIG's 20-inch-diameter Uinta Basin Lateral (UBL) and a small diameter Kinder Morgan natural gas pipeline. The Piceance Basin Expansion Pipeline would parallel the UBL the remainder of the distance to the Wamsutter Compressor Station (**figure 1.6-1**). The proposed WIC Pipeline would be in the same utility corridor from Entrega milepost (MP) 41 to MP 137, a distance of approximately 96 miles. WIC proposes to begin construction in the third quarter of 2005, with a desired in-service date of late December 2005.

On June 22, 2004, WIC[9] requested that the FERC initiate a NEPA Pre-Filing review of the PBEP. The FERC granted WIC's request and assigned Docket No. PF04-13-000 to the proceeding. On July 13, 2004, the FERC issued a *Notice of Intent to Prepare an Environmental Impact Statement for the Piceance Basin Expansion Project, Request for Comments on Environmental Issues, and Notice of Public Scoping Meetings and Route Inspection* (Piceance NOI). The Piceance NOI invited public participation in joint stakeholder and public scoping meetings that were held in Craig, Colorado, on August 3, 2004, and in Meeker, Colorado, on August 4, 2004. The comment period for the PBEP closed on August 15, 2004. On January 24, 2005, WIC filed its application for the PBEP with the FERC. On that date, WIC's PF docket was closed and Docket No. CP05-54-000 was assigned to the PBEP.

Because the PBEP would be located in the same utility corridor as the EPP over a distance of approximately 96 miles, and both projects are proposed to be constructed in nearly the same timeframe between the Piceance Basin and Wamsutter, the FERC and BLM considered whether to analyze both projects together in the same EIS. This approach was ultimately rejected because the planning for the PBEP was several months behind that of the EPP. We determined that if either project were delayed, development of a single EIS would potentially penalize the other project by imposing unnecessary NEPA processing delays. If WIC's project development caught up with the EPP prior to release of a draft EIS, the issue of a single EIS covering both projects would have been revisited.

Consequently, each project is being analyzed in a separate EIS; however, the combined environmental effects of both projects are being considered together where the two projects overlap. In some instances, the decisions to be made for the EPP could affect the location and construction procedures for the PBEP. To account for the joint environmental and construction issues for both projects, route alternatives were developed in which both projects would be located together for all or part of the pipeline segment between the Piceance Basin and Wamsutter. The purpose of these alternatives is to examine options to reduce the overall surface disturbance for both projects and a consequent reduction in resource effects. Another purpose is to determine whether one applicant's proposal would yield greater environmental protection benefits than the other proposal where the two project proposed routes are geographically separate (between the Piceance Basin and Entrega MP 33.2). The rationale and scope of the route alternatives are presented in chapter 4.0. The FERC and the BLM have encouraged the two companies to work together to closely collocate their facilities wherever possible, and to conduct joint construction planning with the goal of minimizing environmental impact to the maximum extent practicable.

[9] The request was made and the PF docket assigned in the name of El Paso Pipeline Group, Western Pipelines (WIC's affiliate). Both entities are owned by El Paso Corporation.


Legend
Existing Greasewood Hub
Proposed Meeker Hub
Rivers and Lakes
WIC Alignment
Entrega Alignment
Roads
County Boundary
80
.80
Wamsutter
Sweetwater County
789
Carbon County
WY
CO
Moffat County
13
3 18
Craig
40
Yampa River
0
15 Miles
Rio Blanco County
64
White River
Meeker
139
Entrega Pipeline Project
Figure 1.6-1
Relationship of Proposed WIC and Entrega Gas Pipelines



PROPOSED ACTION

CHAPTER 2

2.0 PROPOSED ACTION

Entrega proposes to construct and operate a new 327.5-mile-long interstate natural gas transmission system from the proposed Meeker Hub in Rio Blanco County, Colorado, to new interconnections in Sweetwater County, Wyoming, and continuing on to the existing Cheyenne natural gas market hub in Weld County, Colorado. In addition to the pipeline, Entrega would construct 3 compressor stations, 7 metering stations, 22 mainline valves, and other associated facilities. An overview map of the project location and facilities is provided in **figure 2.1-1**. Detailed maps showing the pipeline route and aboveground facilities are in appendix L.

Entrega proposes to construct the project in two phases. Phase I would consist of the construction of the pipeline, metering stations, mainline valves, and pipeline pigging facilities, while the compressor stations would be built during Phase II. Entrega is proposing an initial Phase I in-service date of no later than January 1, 2006. Assuming Phase I was completed between the Meeker Hub Compressor Station and Wamsutter prior to January 1, 2006, then Entrega would offer service on that segment on an interim basis. Entrega anticipates that this interim service would commence no earlier than September 1, 2005. Entrega has proposed an in-service date for Phase II of April 2007.

2.1 Proposed Facilities

2.1.1 Pipeline Facilities

Between the proposed Meeker Hub and Wamsutter, the EPP would consist of 136.0 miles of 36-inch-diameter pipeline, with 86.2 miles in Colorado (Rio Blanco and Moffat Counties) and 49.8 miles in Wyoming (Sweetwater County). The remaining 191.5 miles of pipeline between Wamsutter and the existing Cheyenne Hub would consist of 42-inch-diameter pipeline, with 183.0 miles in Wyoming (Sweetwater, Carbon, Albany, and Laramie Counties) and 8.5 miles in Colorado (Larimer and Weld Counties). The maximum allowable operating pressure (MAOP) of the system would be 1,480 pounds per square inch gauge (psig).

The pipeline would be constructed in primarily Class 1 and Class 2 locations as defined by U.S. Department of Transportation (DOT) regulations at 49 CFR 192. The pipeline would be constructed of high-strength steel pipe (grade X70) with a wall thickness of 0.529 inch for the 36-inch-diameter portion of the pipeline and 0.617 inch for the 42-inch-diameter portion. Entrega is considering the use of a higher grade of pipe (X80), which would allow a reduction of the pipe wall thickness while still meeting federal safety standards. All pipe would be manufactured, constructed, and operated in accordance with applicable local, state, and federal regulations.

2.1.2 Compressor Stations and Appurtenant Facilities

Aboveground facilities associated with the EPP would include 7 metering stations, 22 mainline valves, 4 pig launchers, and 4 pig receivers (**table 2.1-1**). Three natural gas-powered turbine compressor stations



Entrega Pipeline Project

Figure 2.1-1

Project Overview

2-2

2/7/05

Table 2.1-1
Proposed Facilities Associated with the Entrega Pipeline Project

Facility Name	Milepost[1]	County, State	Map No.[2]
PIPELINE			
Meeker Hub to Wamsutter (36 inches in diameter)	-0.5 – 135.5	Rio Blanco & Moffat Counties, Colorado; Sweetwater County, Wyoming	1 through 7
Wamsutter to Cheyenne Hub (42 inches in diameter)	135.5 – 327.0	Sweetwater, Carbon, Albany, and Laramie Counties, Wyoming; Weld County, Colorado	8 through 17
COMPRESSOR STATIONS			
Meeker Hub Compressor Station (15,400 International Organization of Standardization [ISO] horsepower)	0.0	Rio Blanco County, Colorado	1
Bighole Compressor Station (30,000 ISO horsepower)	76.3	Moffat County, Colorado	4
Wamsutter Compressor Station (20,620 ISO horsepower)	135.5	Sweetwater County, Wyoming	7, 8
DELIVERY AND RECEIPT STATIONS (METERING STATIONS)			
Meeker Hub Receipt Station -- EnCana Gathering Services Inc. (interconnect facility sized for receipt of 0.725 to 1.5 Bcfd of natural gas at 1,280 psig)	0.0	Rio Blanco County, Colorado	1
Wamsutter Delivery & Receipt Station – WIC (interconnect sized for delivery of up to 0.5 Bcfd of natural gas)	135.5	Sweetwater County, Wyoming	7, 8
Wamsutter Delivery & Receipt Station -- CIG (interconnect sized for delivery of up to 0.5 Bcfd of natural gas)	135.5	Sweetwater County, Wyoming	7, 8
Cheyenne Hub site -- CIG Delivery Station (interconnect sized for delivery of up to 0.6 Bcfd of natural gas)	327.0	Weld County, Colorado	17
Cheyenne Hub site -- Trailblazer Delivery Station (interconnect sized for delivery of up to 0.725 Bcfd of natural gas)	327.0	Weld County, Colorado	17
Cheyenne Hub site -- Cheyenne Plains Delivery Station (interconnect sized for delivery of up to 0.730 Bcfd of natural gas)	327.0	Weld County, Colorado	17
Cheyenne Hub site -- Public Service Company of Colorado Delivery Station (interconnect sized for delivery of up to 0.350 Bcfd of natural gas)	327.0	Weld County, Colorado	17
MAINLINE VALVES (MLV)			
MLV #1	0.0	Rio Blanco County, Colorado	1
MLV #2	18.0	Rio Blanco County, Colorado	1
MLV #3	33.2	Moffat County, Colorado	2
MLV #4	50.1	Moffat County, Colorado	3
MLV #5	65.2	Moffat County, Colorado	4
MLV #6	76.3	Moffat County, Colorado	4
MLV #7	83.7	Moffat County, Colorado	5
MLV #8	102.5	Sweetwater County, Wyoming	6
MLV #9	117.8	Sweetwater County, Wyoming	7
MLV #10	135.5	Sweetwater County, Wyoming	7, 8
MLV #11	151.7	Sweetwater County, Wyoming	8
MLV #12	169.6	Carbon County, Wyoming	9
MLV #13	187.2	Carbon County, Wyoming	10
MLV #14	205.1	Carbon County, Wyoming	11
MLV #15	219.8	Carbon County, Wyoming	12
MLV #16	236.9	Carbon County, Wyoming	13
MLV #17	255.4	Albany County, Wyoming	14
MLV #18	273.4	Albany County, Wyoming	15
MLV #19	292.4	Albany County, Wyoming	16
MLV #20	306.2	Laramie County, Wyoming	16
MLV #21	320.5	Weld County, Colorado	17
MLV #22	327.0	Weld County, Colorado	17
PIG LAUNCHERS AND RECEIVERS			
Meeker Hub Launcher	0.0	Rio Blanco County, Colorado	1
Bighole Launcher/Receiver	76.3	Moffat County, Colorado	4
Wamsutter Launcher/Receiver	135.5	Sweetwater County, Wyoming	7, 8
Arlington Launcher/Receiver	236.9	Carbon County, Wyoming	13
Cheyenne Hub Receiver	327.0	Weld County, Colorado	17

[1] All mileposts are approximate. Note that the proposed EPP begins at MP -0.5.
[2] All project facilities are presented on the maps located in appendix L.

(Meeker Hub, Bighole, and Wamsutter) would be constructed during Phase II. The three new compressor stations would enable Entrega to maintain the required pressure for firm gas deliveries and to restore the drop in pressure that would otherwise occur as the gas flows through the pipeline. Between Wamsutter and the Cheyenne Hub the pipeline would be capable of future expansion to 2.0 Bcfd or more, depending on need for east-west capacity or to accommodate the receipt of natural gas produced in nearby areas of Wyoming.

Entrega would construct the seven delivery/receipt meter stations at interconnections with other pipelines. At the proposed Meeker Hub Compressor Station, Entrega would construct a receipt lateral to interconnect with EnCana (see section 2.3.3, **figure 2.3-3**).

At the proposed Wamsutter Compressor Station (MP 135.5), Entrega would construct two laterals to interconnect with existing interstate natural gas pipeline systems owned by CIG and WIC (see section 2.3.3, **figure 2.3-5**). On the station site itself, Entrega would install two bi-directional measurement facilities to enable either the delivery or receipt of up to 0.5 Bcfd of natural gas from CIG and WIC individually.

At the proposed Cheyenne Hub Metering Station (MP 327), Entrega would construct four delivery laterals to interconnect with three existing interstate pipeline systems (CIG, Cheyenne Plains Gas Pipeline Company [Cheyenne Plains], and Trailblazer Pipeline Company [Trailblazer]) and one existing local distribution company (Public Service Company of Colorado [PSCo]) (see section 2.3.3, **figure 2.3-7**). The systems to which Entrega would interconnect and the proposed lateral lengths and diameters are summarized in **table 2.1-2**.

Table 2.1-2
Proposed Receipt and Delivery Laterals for the Entrega Pipeline Project

Station/Interconnection With	Lateral Length[1] (feet)	Lateral diameter (inches)
Meeker Hub Compressor Station		
EnCana	2,640	36
Wamsutter Compressor Station		
CIG	1,000	20
WIC	1,000	20
Cheyenne Hub Metering Station		
CIG	3,200	20
Cheyenne Plains	750	24
Trailblazer	2,500	24
PSCo	4,800	16

[1] Lateral lengths are approximate.

2.2 Land Requirements

Table 2.2-1 summarizes the land requirements for the proposed EPP. Entrega proposes to use a 100-foot-wide construction ROW for the majority of the pipeline route and for all receipt and delivery laterals. **Figure 2.2-1** illustrates the typical construction ROW and equipment work locations where the proposed pipeline would not be located near an existing pipeline; **figure 2.2-2** illustrates the proposed construction ROW where the pipeline would be located parallel to an existing pipeline. Entrega also has requested that the BLM authorize 50 feet of the construction ROW (centered on the proposed pipeline) to be retained as part of Entrega's permanent easement, which would be permanently maintained (e.g., by periodic clearing) during operation of the new facilities. Entrega has agreed to reduce the construction ROW width to 75 feet in wetlands.

Construction of the EPP would disturb approximately 5,064 acres of land, including the pipeline construction ROW, additional temporary workspace areas, aboveground facility sites, and pipe storage and contractor yards. Of this total, about 4,147 acres would be disturbed by the pipeline construction ROW, 407 acres would be disturbed by additional temporary workspace areas, and 411 acres would be disturbed by pipe storage and contractor yards. Construction of the aboveground facilities would affect an additional 93 acres. Disturbance due to construction of powerlines (6 acres) is considered separately.

These totals do not include the short-term use of about 137 access and haul roads totaling 295 miles in length to access the ROW, many of which would require upgrading or maintenance (see section 2.2.4).

Approximately 2,084 acres of the 5,064 acres used for construction would be required for operation of the project. Of this total, about 1,985 acres would be for the pipeline permanent ROW, an additional 93 acres would be for the aboveground facilities and 6 acres for powerlines. The remaining 2,980 acres of land would be restored and allowed to revert to former use.

Approximately 44 percent of the land affected by construction and operation of the EPP would be public lands and 56 percent would be private lands. Of the total public lands, the BLM manages 74 percent, the State of Colorado manages 11 percent, and the State of Wyoming manages 9 percent. A detailed description of land ownership is presented in section 3.7.

2.2.1 Pipeline ROW

Approximately 94 percent of the 327.5 miles of pipeline to be constructed would be within about 300 feet of existing pipeline, utility, or road ROWs. About 18.1 miles (6 percent) of the route proposed for construction would be newly created ROW. Where the proposed pipeline route would parallel existing utilities, Entrega's new permanent ROW would be adjacent to the existing permanent ROWs. As proposed, the new pipeline would generally be installed with a 40-foot offset from the nearest existing pipeline centerline.

Table 2.2-1
Summary of Land Requirements Associated with the Entrega Pipeline Project

Facility	Milepost(s)	Land Affected During Construction (acres)	Land Affected During Operation (acres)
COLORADO			
Pipeline Facilities			
Pipeline ROW[1]	-0.5 to 85.7 318.5 to 327.0	1,212	575
Lateral lines		15	15
Additional Temporary Workspace Areas	N/A	122	0
Pipe and Contractor Yards	N/A	61	0
Pipeline Facilities Total		*1,410*	*590*
Aboveground Facilities			
Compressor Stations	0.0, and 76.3	40	39.8
Metering Stations	0.0 (1) 327.0 (4)	5[2]	5[2]
Mainline Valves	Various (see **table 2.1-1**)	0[3]	0[3]
Pig Launchers & Receivers	0.0[4], 76.3[5], and 327.0[6]	0[7]	0[7]
Permanent access roads to aboveground facilities		<1	<1
Aboveground Facilities Total		*45*	*45*
Powerlines		2	2
Colorado Subtotal[8]		*1,457*	*636*
WYOMING			
Pipeline Facilities			
Pipeline ROW[1]	85.7 to 318.5	2,935	1,411
Lateral lines		7	7
Additional Temporary Workspace Areas	N/A	285	0
Pipe and Contractor Yards	N/A	350	0
Pipeline Facilities Total		*3,577*	*1,418*
Aboveground Facilities			
Compressor Stations	135.5	17	17
Metering Stations	135.5 (2)	0[2]	0[2]
Mainline Valves	Various (see **table 2.1-1**)	0[3]	0[3]
Pig Launchers & Receivers	135.5 and 236.9[9]	3[9]	3
Permanent access roads to aboveground facilities		6	6
Aboveground Facilities Total		*26*	*26*
Powerlines		4	4
Wyoming Subtotal[8]		*3,607*	*1,448*
PROJECT TOTAL[8]		**5,064**	**2,084**

[1] Based on a 100-foot-wide construction ROW, except in wetlands where a 75-foot-wide construction ROW would be used, or in areas requiring extra width for workspace necessitated by site conditions. Operation acreage was estimated based on a 50-foot-wide permanently maintained ROW in all areas.

[2] With the exception of the Cheyenne Hub Metering Station, each meter station would be constructed and operated within the area associated with a compressor station.

[3] Each mainline valve would be constructed within the 100-foot-wide construction ROW and operated within the permanently maintained 50-foot-wide ROW, or within the area associated with a meter station or compressor station.

[4] One pig launcher would be constructed at the Meeker Hub Compressor Station at MP 0.0.

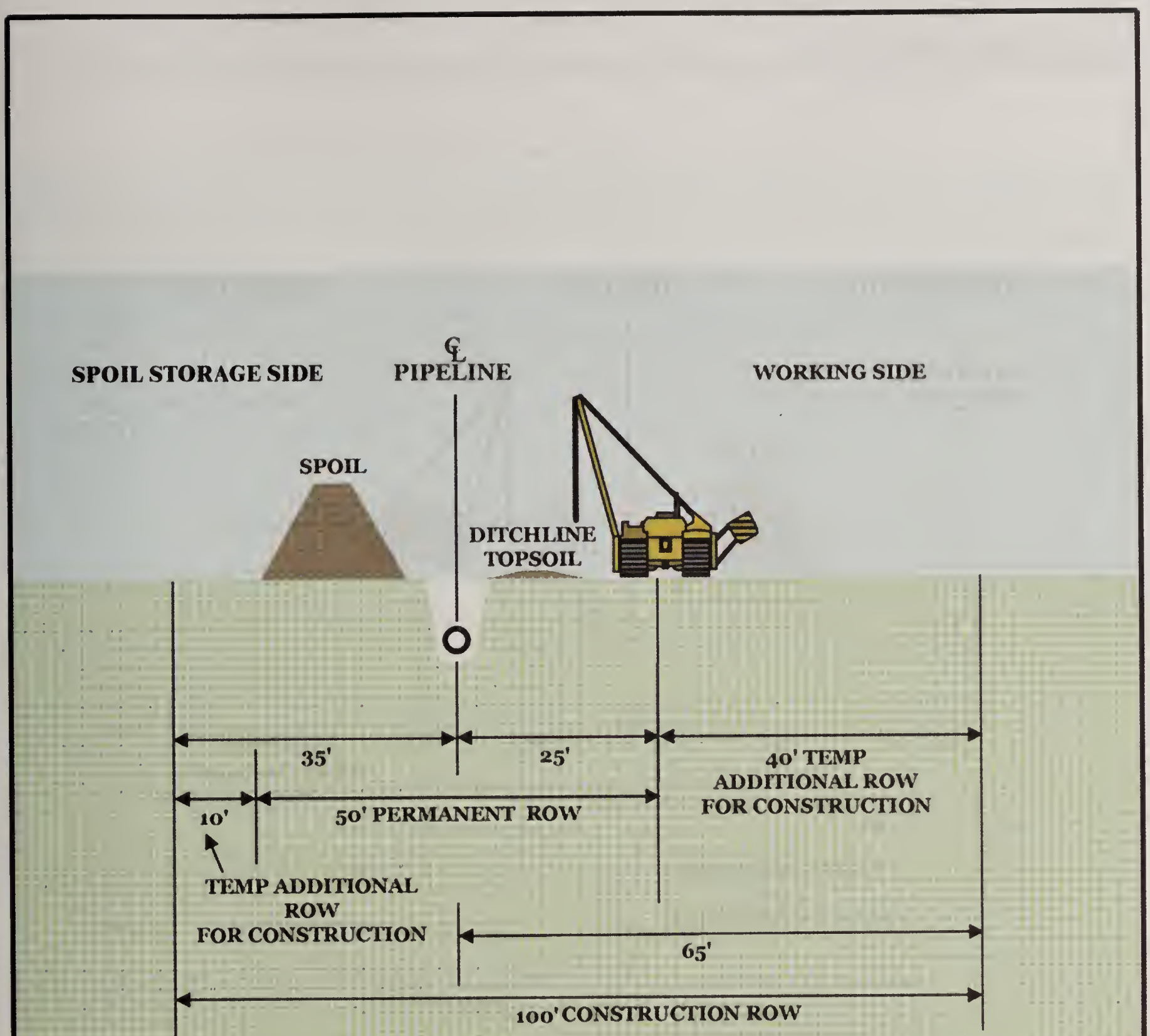
[5] One pig launcher and pig receiver would be constructed at the Bighole Compressor Station at MP 76.3.

[6] One pig receiver would be constructed within the Cheyenne Hub Metering Station at MP 327.5.

[7] Each pig launcher and/or pig receiver would be constructed and operated within the compressor or meter station site.

[8] Discrepancies in total acreages are due to rounding.

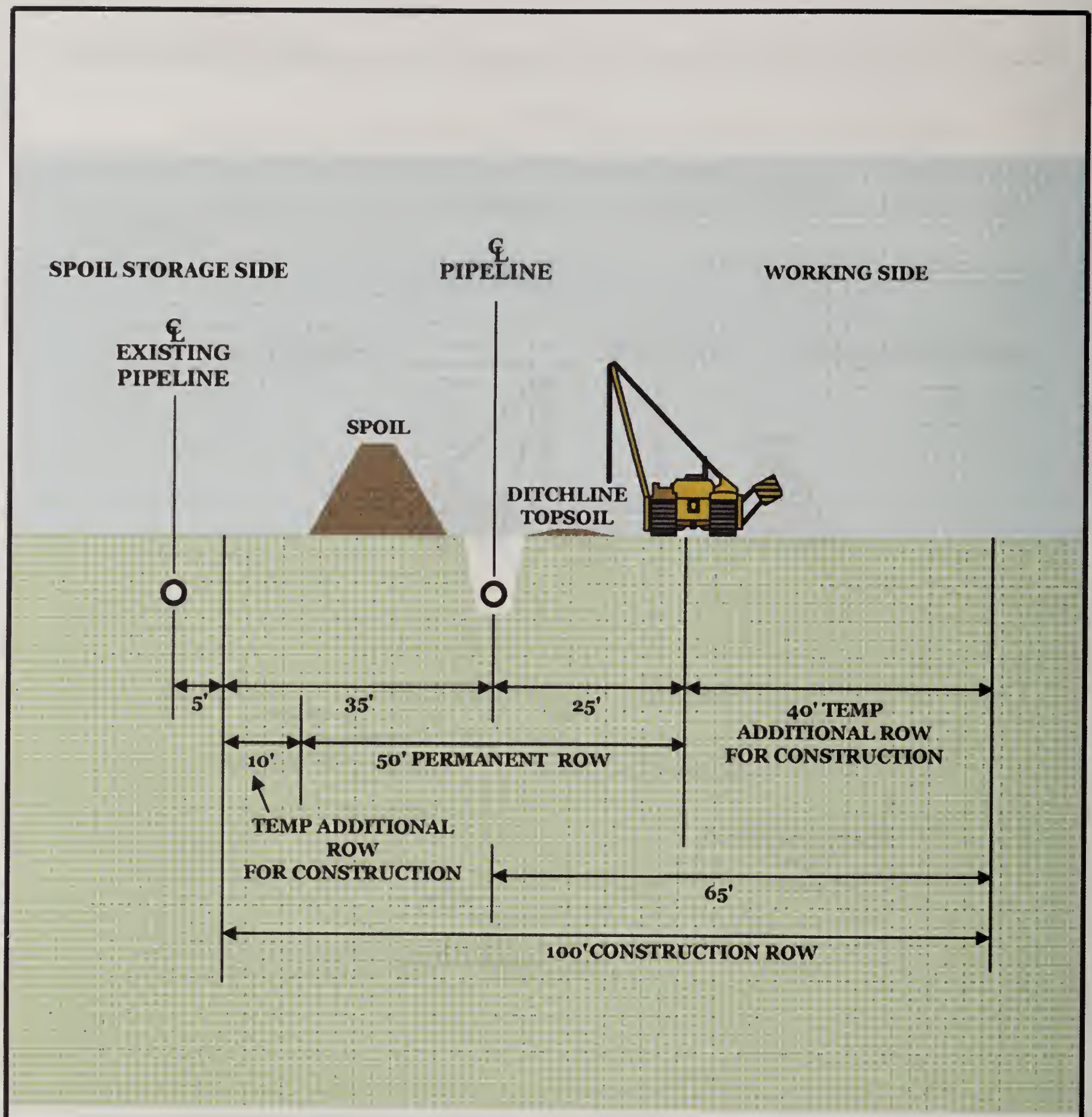
[9] One pig launcher and one pig receiver would be constructed at each of the following: Wamsutter Compressor Station (MP 135.5) and the Arlington Pigging Station (MP 236.9).



Entrega Pipeline Project

Figure 2.2-1

Typical Construction ROW



Entrega Pipeline Project

Figure 2.2-2

Typical Construction ROW when Adjacent to Existing Pipeline

2.2.2 Additional Temporary Workspace Areas

In addition to the construction ROW, Entrega has identified the types of additional temporary workspace areas that would be required (**table 2.2-2**) and where these sites would be located. These additional temporary workspaces would be needed for areas requiring special construction techniques (e.g., river, wetland, and road crossings; horizontal directional drill entry and exit points; steep slopes; rocky soils) and construction staging areas. Prior to construction, Entrega would be required to file a complete and updated list of temporary workspace areas with the Secretary of the Commission (Secretary) for review and approval prior to use. Additional temporary workspace areas on federal land would require authorization from the BLM in the form of a temporary use permit.

Table 2.2-2
Dimensions and Acreage of Typical Additional Temporary Workspace Areas

Feature	Dimensions[1] (length by width in feet at each side of crossing)	Acreage[1]
Full ROW topsoil stripping	Length of area x 25	Varies
Steep hill or side slopes	Length of area x area dependent upon hill and/or side slope grade	Varies
Spread mobilization/demobilization and staging	300 x 150[2]	1.0
Foreign pipeline crossovers	L-shaped	Varies
Open-cut roads	125 x 50[3]	0.1
Bored highways and railroads	175 x 50[4]	0.2
Open-cut waterbodies <50 feet wide	300 x 50[5]	0.3
Open-cut waterbodies >50 feet wide	300 x 100[6]	0.7
Directionally drilled waterbodies and wetlands	300 x 100 plus the length of the drill[7]	+0.7

[1] Dimensions and acreage are for each workspace; some crossings would require workspace on both sides of the feature.
[2] Space also could consist of one 200-foot by 150-foot area (0.7 acre) if turn around is required.
[3] Space could consist of up to four 125-foot by 50-foot areas. Space dimension is the minimum that would be required; actual dimensions could increase depending upon the individual crossing.
[4] Space could consist of up to four 175-foot by 50-foot areas. Space dimension is the minimum that would be required; actual dimensions could increase depending upon the individual crossing.
[5] Space could consist of up to four 300-foot by 50-foot areas. Space dimension is the minimum that would be required; actual dimensions would increase depending upon the individual crossing.
[6] Space could consist of up to four 300-foot by 100-foot areas. Space dimension is the minimum that would be required; crossing lengths greater than 100 feet would require that the workspace length increase depending upon the individual crossing.
[7] Space could consist of up to four 300-foot (plus length between drill entry and exit point to accommodate pipe lay-down area) by 100-foot areas.

2.2.3 Pipe Storage and Contractor Yards

Off-ROW extra workspace areas that would be used during the construction phase of the project include pipe storage yards and contractor yards. Entrega proposes to use six pipe storage and three contractor yards during construction (**table 2.2-3**). To the extent practical, Entrega proposes to use existing commercial/industrial sites or sites that previously have been used for construction. Existing public or private roads would be used to access each yard. Both pipe storage yards and contractor yards would be used on a temporary basis and would be restored upon completion of construction.

Table 2.2-3
Locations and Acreage of Pipe Storage Yards and Contractor Yards

State/Yard Name	Status	Legal Description	Acreage[1]
COLORADO			
Meeker Pipe Storage Yard	Previously disturbed area	SE¼ Section 31, T2N, R96W and NE¼ Section 6, T1N, R96W	38.1
Craig Pipe Storage Yard	Previously disturbed area	SE¼ Section 1, T6N, R91W	20.2
Craig Contractor Yard	Existing site	NW¼ Section 5, T6N, R90W	3.1
WYOMING			
Wamsutter Pipe Storage Yard		SW ¼ Section 15, T20N, R94W	58.4
Rawlins Pipe Storage Yard	Previously disturbed area	N½ Section 23, T21N, R88W	57.1
Rawlins Contractor Yard	Existing site	NW¼ Section 21, T21N, R87W	13.3
Laramie Pipe Storage Yard	Previously disturbed area	NE¼ and SE¼ Section 29, T16N, R73W	19.3
Laramie Contractor Yard	Existing site	SE¼ Section 29, T16N, R73W	12.9
Cheyenne Pipe Storage Yard	Existing site	SE¼ Section 27, T13N, R67W NW¼, NE¼, and SE¼ Section 34, T13N, R67W NE¼ Section 3, T12N, R67W	199.8

[1] Each yard would be accessed via existing roads.

2.2.4 Access Roads

Entrega would use preexisting roads to provide access to most of the construction ROW. Entrega plans to use 137 existing roads on a temporary basis to transport personnel, equipment, vehicles (including high clearance vehicles and heavy trucks), and materials to the proposed project work areas. Sixty existing roads would be used in Colorado and 77 existing roads would be used in Wyoming.

Entrega has indicated that it would need to improve and maintain about 99 of the proposed 137 temporary access roads needed to access the work areas. Class A (paved) roads and many Class B (gravel) roads may not require improvement or maintenance prior to or during construction unless the road base deteriorated or became unsafe or impassable. All of the Class C (two-track and dirt) roads would probably require some level of improvement to support construction equipment, vehicles and ongoing maintenance during the construction period, especially when rain occurs and travel over the roads degrades their condition. Road improvements such as blading and filling would be restricted to the existing road footprint (i.e., the road may not be widened) wherever possible where there is evidence that the road was previously graded. Entrega also has proposed that where there is no evidence of previous grading or if the road required widening, road maintenance would only be allowed after completing biological and cultural resources surveys, and completing appropriate consultations with the State Historic Preservation Office (SHPO) and FWS. In all cases, roads would be used and maintained only with permission of the landowner or land management agency.

As a part of its permanent aboveground facilities, Entrega also would construct short, permanent access roads from public roads to the proposed compressor stations, metering stations, and mainline valves. While

Entrega has not identified all of the locations of these permanent access roads, for this analysis, we have identified reasonable permanent access roads, and have quantified the associated disturbance. The resulting estimate of acres of disturbance is included in the Aboveground Facility discussion (section 2.2.5). Prior to construction, Entrega would finalize proposed permanent access roads along with any additional temporary access roads and submit them to the Secretary for review and approval. At a minimum, construction of new access roads would require completion of cultural resources and biological surveys, along with the appropriate SHPO and FWS consultations and approvals. Other state and local permits also may be required prior to construction. In the future, maintenance of newly created access roads would be the responsibility of Entrega, with jurisdiction over the road remaining with the affected land management agency or private landowner. Any permanent access roads on federal land would be considered an ancillary facility to the ROW and added to any grant from the BLM.

2.2.5 Aboveground Facilities

Entrega would use a total of about 71 acres of land for construction of aboveground facilities, including compressor stations, metering stations, mainline valves, and pig launchers and receivers. Estimated disturbance due to new permanent access roads is 6 acres. These 71 acres also would be used during operation.

During Phase II, Entrega would construct three new compressor stations: the Meeker Hub Compressor Station, the Bighole Compressor Station, and the Wamsutter Compressor Station (**table 2.1-1**). Each station would consist of a compressor building, utility building, and parking area for station personnel. Each compressor station would be equipped with compression, gas filtration/separation equipment, and at least one generator. With the exception of the Bighole Compressor Station, stations would operate on locally purchased power for electricity for lights and heating in the buildings and would be fully automated for unmanned operation. Each station would house natural gas turbine compressors. Remote start/stop, set point controls, unit monitoring equipment, and station information would be installed at each location. Pipeline entering and exiting the compressor facilities would be below grade as practicable, but would come above ground prior to entering and exiting the compressor buildings.

Entrega would install seven metering stations along the proposed pipeline route within the proposed Meeker Hub Compressor Station, Wamsutter Compressor Station, and the Cheyenne Hub Metering Station (**table 2.1-1**). The metering stations would include pressure regulating, heating, sampling, chromatography, tube switching, and electronic gas measurement equipment.

Entrega would construct 22 mainline valves along the proposed route (**table 2.1-1**). Seventeen of the mainline valves would be constructed in a 40-foot-wide by 60-foot-long site located within the 100-foot-wide pipeline construction ROW and would operate within the 50-foot-wide permanently maintained ROW. The remaining five mainline valves would be constructed and operated within the proposed compressor stations. The spacing intervals between the mainline valves would be approximately every 15 to 20 miles, in accordance with current DOT class locations.

Pig launchers and/or receivers would be constructed and operated completely within the boundaries of the compressor stations and at the Cheyenne Hub Metering Station (**table 2.1-1**). Launchers and receivers would allow the pipeline to accommodate a high-resolution internal line inspection tool.

2.3 Construction Procedures

At a minimum, the proposed facilities would be designed, constructed, tested, and operated in accordance with all applicable requirements included in the DOT regulations in 49 CFR 192, *Transportation of Natural Gas and Other Gas by Pipeline: Minimum Federal Safety Standards*, and other applicable federal and state regulations. These regulations are intended to ensure adequate protection for the public and to prevent natural gas pipeline accidents and failures. Among other design standards, Part 192 specifies pipeline material and qualification, minimum design requirements, and protection from internal, external, and atmospheric corrosion.

To reduce construction impact, Entrega would implement its project-specific Upland Erosion Control, Revegetation, and Maintenance Plan (Entrega's Plan) in upland areas (see appendix A) and its project-specific Wetland and Waterbody Construction and Mitigation Procedures (Entrega's Procedures) for construction across wetlands and waterbodies (appendix B). Entrega's Plan and Procedures are based on the mitigation measures contained in our *Upland Erosion Control, Revegetation, and Maintenance Plan* and *Wetland and Waterbody Construction and Mitigation Procedures*. Our review indicates that the few differences between Entrega's Plan and Procedures and our Plan and Procedures are minor, generally reflect the arid western climate, and do not compromise the effectiveness of the proposed mitigation or the protection of the resources. Therefore, we believe that Entrega's Plan and Procedures would provide a level of environmental protection that is equivalent to the measures contained in our Plan and Procedures.

Additional mitigation is contained in Entrega's Construction, Mitigation, and Reclamation Plan (appendix C), developed in consultation with the BLM. In this plan, Entrega has identified seven vegetation communities (Colorado-3, Wyoming-4) crossed by the pipeline. Entrega's Plan describes reclamation techniques and procedures, including specifics of seedbed preparation, seed mixtures and rates, preventing the spread of noxious weeds, seeding methods, mulching rates, success criteria, and monitoring and reporting requirements. This plan also addresses mitigation and restoration of sensitive locations including habitat for federally listed threatened or endangered species and vegetation communities of special concern or value, areas containing sensitive cultural resources, and visually sensitive areas. Entrega's topsoil segregation program would be an important mitigation element especially in arid habitats where vegetation is notably sensitive to disturbance, and revegetation would be a slow process.

In addition to its Plan and Procedures, Entrega has prepared several specific plans that include measures to mitigate for potential impacts. For example, Entrega's Weed Management Plan (appendix D) includes site-specific measures that would be implemented to control noxious weeds, including the use of cleaned, weed-free equipment; the use of compressed air to remove seeds and other propagules from equipment prior to transport from a site; and the use of certified weed-free straw/hay bales to control erosion. Details of the Weed Management Plan including important committed mitigation measures are discussed in section 3.2.

Entrega also would implement its Spill Prevention, Control, and Countermeasure (SPCC) Plan to avoid or minimize the potential for harmful spills and leaks during construction. Entrega's SPCC Plan describes spill prevention practices, emergency response procedures, emergency and personnel protection equipment, release notification procedures, and cleanup procedures. The SPCC Plan is discussed further in the context of different resources (e.g., sections 3.2, 3.3, and 3.5)

Additional resource and issue-specific plans, including Entrega's Typical Incised Bank Stabilization Restoration Plan (appendix E), Site-Specific Waterbody Crossing Plans (appendix F), and Site-Specific Construction and Revegetation Plan for Riparian Woodland Communities (Riparian Woodland Plan, see appendix G) also would provide engineering design specifications and key mitigation to limit, to the maximum extent practicable, environmental impact from construction in and adjacent to waterbodies crossed by the EPP. Where riparian woodlands are encountered, mitigation implemented during construction would be coupled with specific restoration measures to return the woodlands to near-preconstruction conditions as quickly as possible.

Additionally, Entrega has prepared an Emergency Response Plan (ERP) to identify it's emergency personnel and the logical sequence of actions, which should be taken in the event of an emergency involving the Entrega system facilities during construction of the EPP. Once the pipeline is constructed and pipeline operations commence, the ERP will be finalized so that it meets the federal safety requirements (49 CFR 192.615). The current preliminary version of the ERP establishes written emergency shut down procedures, communication coordination, and clean-up responsibilities in the event of a gas pipeline emergency or a natural disaster.

All of Entrega's mitigation plans discussed above are important components of its POD. The POD is a document required by the BLM prior to issuance of the ROD. If the project were approved, the POD would be appended to the ROW grant issued by the BLM and would serve as a project resource manual. The BLM and Entrega are currently in the process of finalizing the POD, which will include all of the measures that are described in this EIS as well as additional site-specific stipulations that are determined to be necessary on federal lands. Any additional site-specific measures included in the POD would not contradict the mitigation measures of this EIS.

It is our intent that the mitigation and other measures contained in the POD not be limited to federal lands alone, but considered the basic design applicable to all lands disturbed by the EPP. This approach would enable construction to proceed with a single set of "rules," irrespective of the ownership status (federal versus non-federal) of the land being crossed. On private lands, this basic design may be modified slightly to accommodate specific landowner requests/preferences. For example, while Entrega proposes to strip and segregate topsoil from the ditch line only where surface conditions allow, a private landowner may request the topsoil on their property be stripped from a larger portion of the ROW (or even the full ROW). Another example is illustrated by a condition frequently attached to FERC certificates which states (in abbreviated version) that the FERC staff must review and provide written approval for all route realignments *except for* minor field realignments per landowner needs and requirements that do not affect other landowners or sensitive environmental areas (see recommendation 5 in section 5.5).

2.3.1 General Pipeline Construction Procedures

Before starting construction, Entrega would finalize engineering surveys of the ROW centerline and extra workspaces, and complete land or easement acquisition on private and state land. On federal land, Entrega would need to obtain a ROW grant from the BLM. Overland pipeline construction generally proceeds as a moving assembly line as shown in **figure 2.3-1** and as summarized below. Entrega currently plans to construct the pipeline in two segments. Entrega plans to construct the portion of the line located between the Meeker Hub and Wamsutter Compressor Stations (Segment 1) with one main pipeline spread, starting in Wamsutter (MP 135.6) and proceeding southerly for at least 79 miles (to MP 56.6). The remaining 57 miles of Segment 1 is complicated by terrain (slopes, side slopes, wetlands), larger road crossings, more waterbody crossings, pipeline crossings, and changing sides of the corridor, so Enterga plans to use a series of smaller spreads constructed simultaneously for this portion of Segment 1. Because of the location of Entrega's pipeline relative to existing pipelines/utilities in the I-80 utility corridor, Entrega intends to construct Segment 2 with two main pipeline spreads of roughly the same length working in a general easterly direction from MPs 135.6 and 237. Separate crews would be used for construction of the aboveground facilities.

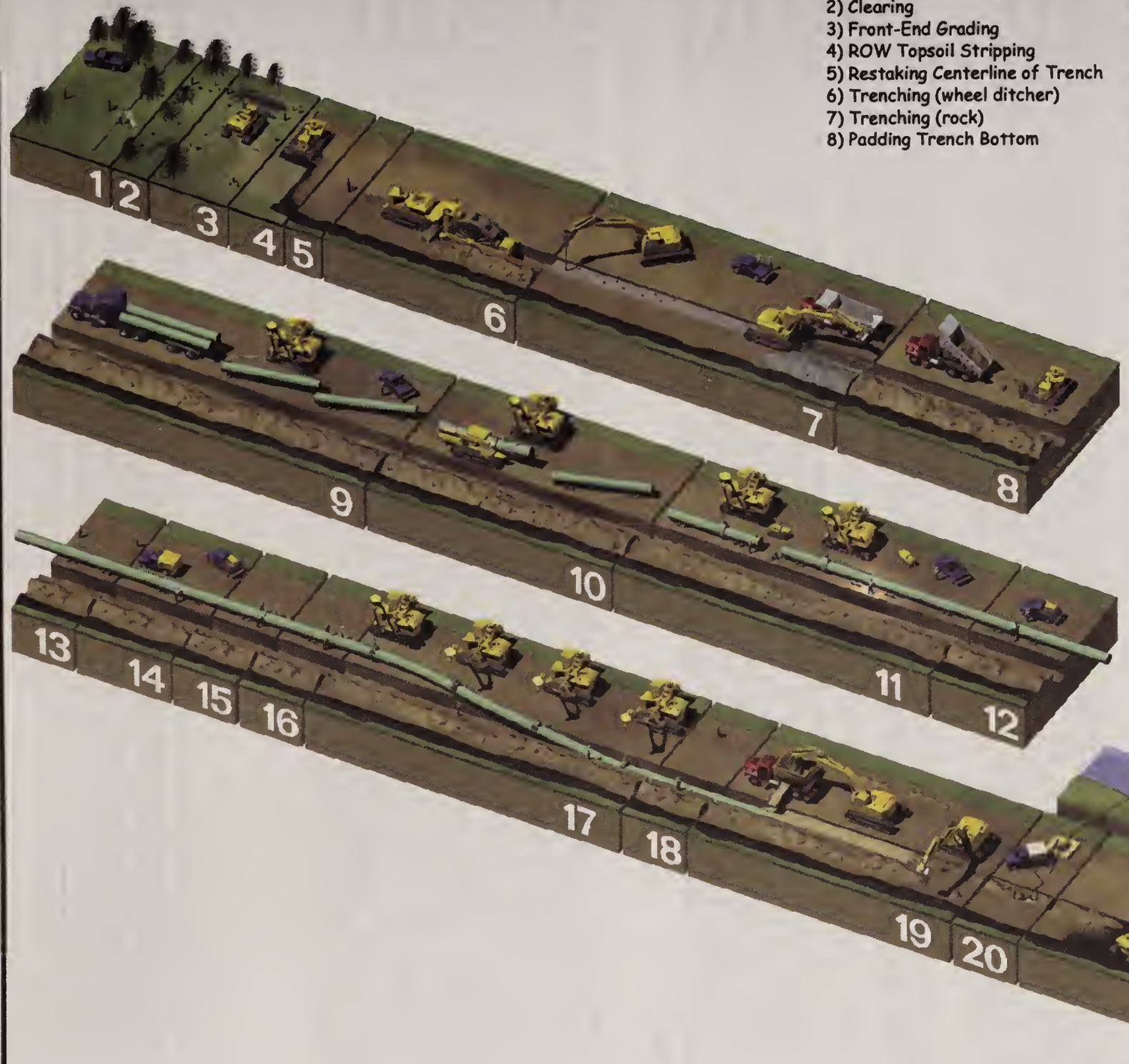
Standard pipeline construction is composed of specific activities including survey and staking of the ROW, clearing and grading, trenching, pipe stringing, bending, welding, lowering-in, backfilling, hydrostatic testing, and cleanup. In addition to standard pipeline construction methods, Entrega would use special construction techniques where warranted by site-specific conditions. These special techniques would be used when constructing across rugged terrain, waterbodies, wetlands, paved roads, highways, and railroads (section 2.3.2).

Survey and Staking

The first step of construction would involve marking the limits of the approved work area (i.e., the construction ROW boundaries, additional temporary workspace areas) and flagging the location of approved access roads and foreign utility lines. Wetland boundaries and other environmentally sensitive areas also would be marked or fenced for protection at this time. Before the pipeline trench is excavated, a survey crew would stake the centerline of the proposed trench. Entrega would notify landowners at least 5 days prior to the initiation of staking and surveying on their property.

Clearing and Grading

Before clearing and grading activities were conducted, landowner fences would be braced and cut, and temporary gates and fences would be installed to contain livestock, if present. A clearing crew would follow the fence crew and would clear the work area of vegetation and obstacles (e.g., trees, logs, brush, rocks). Temporary erosion control measures such as silt fences or straw bales would be installed prior to vegetation removal along wetlands and riparian areas. Grading would be conducted where necessary to provide a reasonably level work surface. Where the ground is relatively flat and does not require grading, rootstock



1) Survey and Staking
2) Clearing
3) Front-End Grading
4) ROW Topsoil Stripping
5) Restaking Centerline of Trench
6) Trenching (wheel ditcher)
7) Trenching (rock)
8) Padding Trench Bottom
9) Stringing Pipe
10) Field Bending Pipe
11) Line-Up, Initial Weld
12) Fill & Cap, Final Weld
13) As-Built Footage
14) X-Ray Inspection, Weld Repair
15) Coating Field Welds
16) Inspection & Repair of Coating
17) Lowering Pipe into Trench
18) AsBuilt Survey
19) Pad, Backfill, Rough Grade
20) Hydrostatic Testing, Final Tie-in
21) Replace Topsoil, Final Clean-Up, Full Restoration

Entrega Pipeline Project

Figure 2.3-1

Typical Pipeline Construction Sequence

would be left in the ground. More extensive grading would be required in steep side-slopes or vertical areas and where necessary to prevent excessive bending of the pipeline. Temporary erosion controls (e.g., silt fencing or straw bales) would be installed prior to vegetation removal adjacent to wetlands and riparian areas.

Trenching

The trench would be excavated to a depth that provides sufficient cover over the pipeline after backfilling. Typically, the trench would be about 6 to 7 feet deep depending on the pipeline diameter and DOT class location. This would allow for the required 30 to 36 inches of cover.[1] The trench would be about 4 to 6 feet wide in stable soils. Additional cover for the pipeline would be provided at road and waterbody crossings, while less cover (a minimum of 18 inches) is required in rock.

When rock or rocky formations were encountered, tractor-mounted mechanical rippers or rock trenchers would be used for fracturing the rock prior to excavation. In areas where mechanical equipment could not break up or loosen the bedrock, blasting would be required (section 2.3.2). Excavated rock would be used to backfill the trench to the top of the existing bedrock profile.

Unless otherwise requested by the landowner, topsoil would generally be separated from subsoil only over the trench itself. Separated topsoil would be stored on the near side of the trench and in a pile separate from subsoil (which would be stored on the far side of the trench) to allow for proper restoration of the soil during the backfilling process (see **figure 2.2-1**). In areas where the ROW would be graded to provide a level working surface and where there was a need to separate topsoil from subsoil, the ROW would be graded to collect topsoil before any subsoil was disturbed. Again, topsoil would be piled such that the mixing of subsoil and topsoil would not occur. Gaps would be left between the spoil piles to prevent storm water runoff from backing up or flooding. Topsoil would be returned to its original horizon after subsoil was backfilled in the trench.

In areas where rangeland is used for grazing and livestock could not be temporarily relocated by the landowner, construction activities could potentially hinder the movement of livestock across those allotments. Wildlife accustomed to freely moving through the area in search of food and water could also be hindered by construction activities. To minimize impact on livestock and wildlife movements during construction, Entrega would install soft plugs (areas where the trench is excavated and replaced with minimal compaction) to allow livestock and wildlife to safely cross the open trench. Soft plugs would be constructed with a ramp on each side to enable animals that fell into the trench an avenue of escape. To allow for safe passage, soft plugs would be constructed at 1-mile intervals and where the trench is intersected by known livestock or wildlife trails.

[1] The DOT requires buried pipelines to be covered by a minimum of 30 inches of soil in all Class 1 locations. The majority of the proposed route crosses land designated as Class 1, defined as having 10 or fewer buildings intended for human occupancy within 220 yards of the pipeline per mile. In more populated areas and beneath public road ditches and railroad crossings, the minimum cover is 36 inches of soil. In consolidated rock, the minimum cover requirement is 18 inches in Class 1 locations and 24 inches in more populated areas and beneath public road ditches and railroad crossings.

Pipe Stringing, Bending, and Welding

Prior to or following trenching, sections of externally coated pipe up to 80 feet long (also referred to as "joints") would be transported by truck over public road networks and along authorized private access roads to the ROW and placed or "strung" along the trench in a continuous line.

After the pipe sections were strung along the trench and before joints were welded together, individual sections of the pipe would be bent where necessary to allow for uniform fit of the pipeline with the varying contours of the bottom of the trench. A track-mounted, hydraulic pipe-bending machine would shape the pipe to conform to the contours of the terrain. Where multiple or complex bends were required in a section of pipe, that section of the pipeline would be bent at the factory.

After the pipe sections were bent, the joints would be welded together into long strings and placed on temporary supports. The pipeline joints would be lined up and held in position until securely joined by welding. One hundred percent of the welds would undergo radiographic inspection (X-ray), as outlined in 49 CFR 192. Welds that do not meet established specifications would be repaired or removed. Once the welds were approved, a protective epoxy coating would be applied to the welded joints. The pipeline would then be electronically inspected or "jeeped" for faults or voids in the epoxy coating, and visually inspected for any faults, scratches, or other coating defects. Damage to the coating would be repaired before the pipeline was lowered into the trench.

Gaps every mile in the strung pipe string and a corresponding soft plug would be installed to allow passage to livestock and wildlife. Prior to lowering-in of the pipe into the trench, multiple sections of pipeline may be welded together above the ditch to create welded lengths of pipe that may be greater than 1 mile in length. These sections of pipeline will be lowered into the ditch no later than 7 days after they are joined.

Lowering-in and Backfilling

Before the pipeline is lowered in, the trench would be inspected to be sure it is free of livestock or wildlife, as well as rocks and other debris that could damage the pipe or protective coating. In areas where water had accumulated, dewatering could be necessary to inspect the bottom of the trench. The pipeline then would be lowered into the trench. On sloped terrain, trench breakers (stacked sand bags or foam) would be installed in the trench at specified intervals to prevent subsurface water movement along the pipeline. The trench would then be backfilled using the excavated material. In rocky areas, the pipeline would be protected with a rock shield (fabric or screen that is wrapped around the pipe to protect the pipe and its coating from damage by rocks, stones, and roots). Alternatively, the trench bottom would be filled with padding material (e.g., finer grain sand, soil, or gravel) to protect the pipeline. No topsoil would be used as padding material.

Hydrostatic Testing

The pipeline would be hydrostatically tested in 11 sections to ensure the system was capable of withstanding the operating pressure for which it was designed. This process involves isolating the pipe segment with test manifolds, filling the line with water, pressurizing the section to a pressure commensurate

with the MAOP and class location, and then maintaining that pressure for a period of 8 hours. The hydrostatic test would be conducted in accordance with Title 49 CFR Part 192. Entrega proposes to obtain water for hydrostatic testing from surface water sources through specific agreements with landowners and in accordance with federal, state, and local regulations. The pipeline would be hydrostatically tested after backfilling and all construction work that would directly affect the pipe has been completed. If leaks are found, they would be repaired and the section of pipe retested until specifications were met. Water used for the testing would then be transferred to another pipe section for subsequent hydrostatic testing or the water would be tested to ensure compliance with the National Pollution Discharge Elimination System (NPDES) discharge permit requirements, treated if necessary, and discharged. Hydrostatic testing is discussed further in sections 3.3.2, 3.5.1, and 3.6.3.

Final Tie-in

Following successful hydrostatic testing, test manifolds would be removed and the final pipeline tie-ins would be made and inspected.

Commissioning

After final tie-ins are complete and inspected, the pipeline would be cleaned and dried using mechanical tools (pigs) that are moved through the pipeline with pressurized, dry air. The pipeline would be dried to minimize the potential for internal corrosion. Once the pipe has dried sufficiently, pipeline commissioning would commence. Commissioning involves activities to verify that equipment has been properly installed and is working, the controls and communications systems are functional, and that the pipeline is ready for service. In the final step, the pipeline is prepared for service by purging the line of air and loading the line with natural gas.

Cleanup and Restoration

During cleanup, construction debris on the ROW would be disposed of and work areas would be final graded. Preconstruction contours would be restored as closely as possible. Segregated topsoil would be spread over the surface of the ROW and permanent erosion controls would be installed. After backfilling, final cleanup would begin as soon as weather and site conditions permit. Every reasonable effort would be made to complete final cleanup (including final grading and installation of erosion control devices) within 20 days after backfilling the trench (10 days in residential areas). Construction debris would be cleaned up and taken to a disposal facility.

After permanent erosion control devices are installed and final grading has occurred, all disturbed work areas would be seeded as soon as possible. Seeding is intended to stabilize the soil, revegetate areas disturbed by construction, and, depending upon land use, restore native flora. Timing of the reseeding efforts would depend upon weather and soil conditions and would be subject to the prescribed dates and seed mixes specified by the landowner, land-managing agency, or Natural Resource Conservation Service (NRCS) recommendations.

Entrega would restrict access along the ROW using gates, boulders, or other barriers to minimize unauthorized access by all-terrain vehicles. Pipeline markers would be installed at fence, road, and railroad crossings and other locations (as required by 49 CFR 192) to show the location of the pipeline. Markers would identify the owner of the pipeline and convey emergency information. Special markers providing information and guidance to aerial patrol pilots also would be installed.

2.3.2 Special Construction Procedures

In addition to standard pipeline construction methods, Entrega would use special construction techniques where warranted by site-specific conditions. These special techniques would be used when constructing across paved roads, highways, railroads, steep terrain, waterbodies, wetlands, and when blasting through rock. These are described below.

Road, Highway, and Railroad Crossings

Entrega has prepared a Traffic and Transportation Management Plan (TTMP). The TTMP identifies mitigation to reduce potential impacts of project-related road use and construction activity and plans for maintenance or moderate upgrading of existing access roads. Construction across paved roads, highways, and railroads would be in accordance with the requirements of Entrega's road and railroad crossing permits and approvals obtained by Entrega. In general, major paved roads, highways, and railroads would be crossed by boring beneath the road or railroad. Boring requires the excavation of a pit on each side of the feature, the placement of boring equipment in the pit, then boring a hole under the road at least equal to the diameter of the pipe. Once the hole was bored, a prefabricated pipe section would be pushed through the borehole. For long crossings, sections could be welded onto the pipe string just before being pushed through the borehole. Boring would result in minimal or no disruption to traffic at road, highway, or railroad crossings. Each boring would be expected to take 2 to 10 days.

Most smaller, unpaved roads and driveways would be crossed using the open-cut method where permitted by local authorities or private owners. The open-cut method would require temporary closure of the road to traffic and establishment of detours. If no reasonable detour is feasible, at least one lane of traffic would be kept open, except during brief periods when it is essential to close the road to install the pipeline. Most open-cut road crossings would be completed and the road resurfaced in 1 or 2 days. Entrega would take measures, such as posting signs at open-cut road crossings, to ensure safety and minimize traffic disruptions.

Steep Terrain

Additional grading may be required in areas where the proposed pipeline route would cross steep slopes. Steep slopes often need to be graded down to a gentler slope to accommodate pipe-bending limitations. In such areas, the slopes would be cut away, and, after the pipeline is installed, reconstructed to their original contours during restoration.

In areas where the proposed pipeline route crosses laterally along the side of a slope, cut and fill grading may be required to obtain a safe, flat work terrace. Topsoil would be stripped from the entire ROW and

stockpiled prior to cut and fill grading on steep terrain. Generally, on steep side-slopes, soil from the high side of the ROW would be excavated and moved to the low side of the ROW to create a safe and level work terrace. After the pipeline is installed, the soil from the low side of the ROW would be returned to the high side, and the slope's original contours would be restored. Topsoil from the stockpile would be spread over the surface, erosion control features installed, and seeding implemented.

In steep terrain, temporary sediment barriers such as silt fence and certified weed-free straw bales would be installed during clearing to prevent the movement of disturbed soil off the ROW. Temporary slope breakers consisting of mounded and compacted soil would be installed across the ROW during grading, and permanent slope breakers would be installed during cleanup. Following construction, seed would be applied to steep slopes, and the ROW would be mulched with certified weed-free hay or non-brittle straw or covered with erosion control fabric. Entrega would use mulching materials approved by the BLM on the portion of the route that is under its jurisdiction. Sediment barriers would be maintained across the ROW until permanent vegetation is established.

Waterbody Crossings

A total of 44 perennial waterbodies would be crossed by the proposed EPP. Some of these waterbodies would be crossed multiple times. Perennial waterbodies would be crossed using one of four techniques: the open-cut method (Entrega's preferred method), horizontal directional drill (HDD) method, flume method, or dam-and-pump method as described below.

If a waterbody was flowing at the time of construction, Entrega's preferred crossing method would be to use an open-cut. The open-cut method involves trenching through the waterbody while water continues to flow through the construction work area. Pipe segments for the crossing would be fabricated adjacent to the waterbody. Backhoes generally operating from one or both banks would excavate the trench within the streambed. In wider rivers, in-stream operation of equipment may be necessary. Trench plugs (stacked, compacted sand bags) would be placed to prevent the flow of water into the upland portions of the trench. Trench spoil excavated from the streambed would be generally placed at least 10 feet away from the water's edge. Sediment barriers would be installed where necessary to control sediment and to prevent excavated spoil from entering the water. After the trench is dug, the prefabricated pipeline segment would be carried, pushed, or pulled across the waterbody and positioned in the trench. The trench would then be backfilled with native material or with imported material if required by applicable permits. Following backfilling, the banks would be restored and stabilized.

At the White and Yampa Rivers in northwestern Colorado, Entrega would avoid conflicts with endangered fish by using the HDD method of construction across the rivers. The HDD method involves drilling a pilot hole under the waterbody and banks, then enlarging the hole through successive reamings until the hole is large enough to accommodate a prefabricated segment of pipe. Throughout the process of drilling and enlarging the hole, a slurry made of non-toxic fluids, such as naturally occurring bentonite and water, would be circulated through the drilling tools to lubricate the drill bit, remove drill cuttings, and hold the hole open. This slurry is referred to as drilling mud. Pipe sections long enough to span the entire crossing would be staged and welded along the construction work area on the opposite side of the waterbody and then pulled

through the drilled hole. Ideally, use of the HDD method results in no impact on the banks, bed, or water quality of the waterbody being crossed. **Figure 2.3-2** shows a conceptual HDD waterbody crossing.

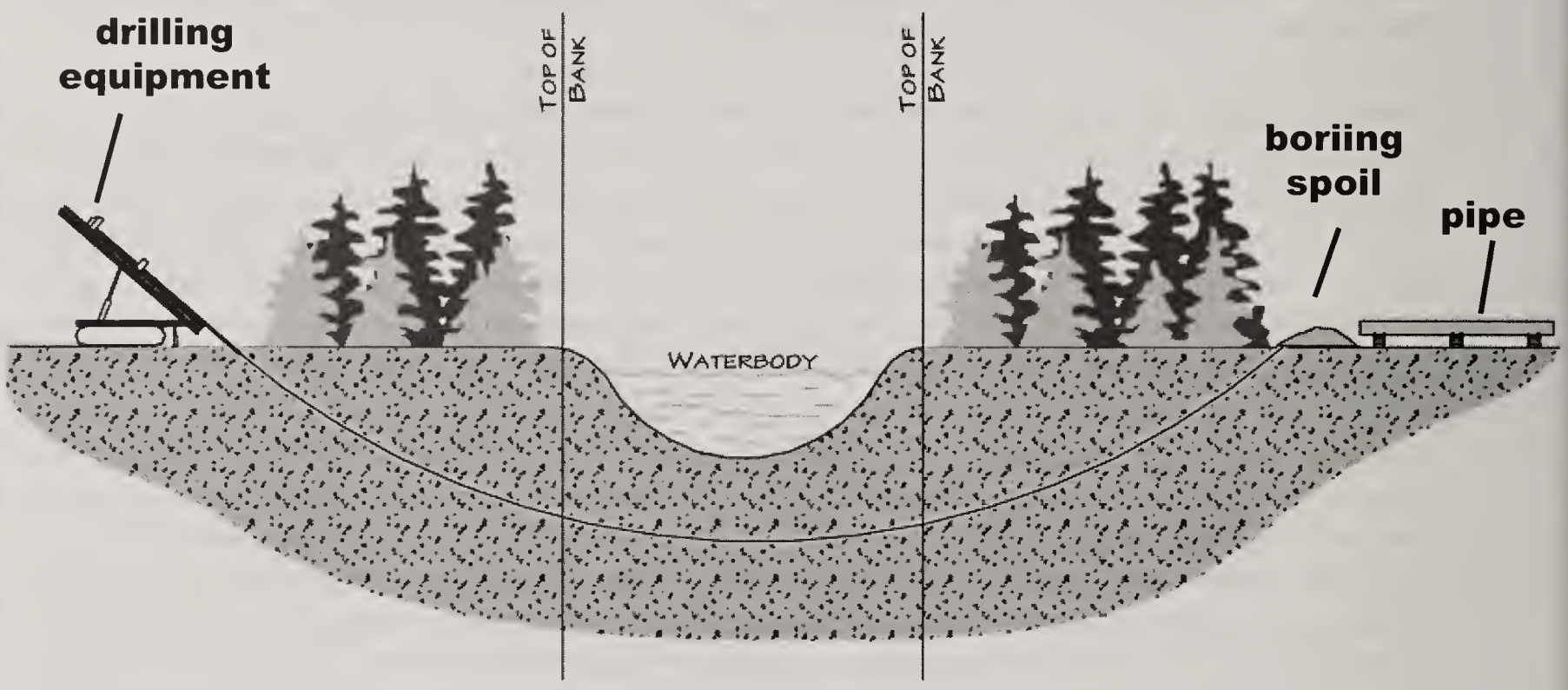
While the flume and dam-and-pump methods also could be considered as alternative crossing methods, Entrega has not proposed to use either. The flume crossing method involves diverting the flow of water across the trenching area through one or more flume pipes placed in the waterbody. The dam-and-pump method is similar to the flume method except that pumps and hoses would be used instead of flumes to move water around the construction work area. In both methods, trenching, pipe installation, and backfilling are done with the streambed in a relatively dry condition while water flow is maintained for all but a short reach of the waterbody at the actual crossing. Once backfilling is completed, the flume or pump hoses are removed and the streambanks restored and stabilized.

The project would also cross approximately 597 intermittent waterbodies. If these intermittent waterbodies are dry at the time of crossing, Entrega proposes to use conventional upland cross-country construction techniques. If an intermittent waterbody is flowing when crossed, Entrega would install the pipeline using one of the waterbody crossing methods discussed above. When crossing waterbodies, Entrega would adhere to the guidelines outlined in Entrega's Plan and Procedures (appendices A and B) and the requirements of its waterbody crossing permits. For major waterbodies (greater than 100 feet wide), Entrega has prepared site-specific crossing plans (appendix F).

Additional temporary workspace areas would be required on both sides of all waterbodies to stage construction, fabricate the pipeline, and store materials. These workspaces would be located at least 50 feet away from the water's edge, except where the adjacent upland consists of actively cultivated or rotated cropland or other disturbed land. Before construction, temporary bridges (e.g., clean rock fill over culverts, timber mats supported by flumes, railcar flatbeds, flexi-float apparatus) would be installed across all perennial waterbodies to allow construction equipment to cross. Construction equipment would be required to use the bridges, except the clearing crew who would be allowed one pass through the waterbodies before the bridges were installed.

Clearing adjacent to waterbodies would involve the removal of vegetation from the construction ROW and additional temporary workspace areas. If no herbaceous strip existed, sediment barriers would be installed at the top of the streambank. Initial grading of the herbaceous strip would be limited to the extent needed to create a safe approach to the waterbody and to install bridges. To minimize impacts on riparian woodlands, Entrega has prepared a Riparian Woodland Plan (appendix G). In riparian woodlands, Entrega would reduce the construction ROW to 75 feet in width. The plan identifies measures to relocate temporary workspace areas away from riparian woodlands, avoid the removal of trees located within the construction area to the maximum extent possible, and revegetate riparian areas with a diversity of species and at densities that will encourage revegetation to preconstruction conditions.

During clearing, sediment barriers would be installed and maintained across the ROW adjacent to waterbodies and within additional temporary workspace areas to minimize the potential for sediment runoff. Silt fence and/or certified weed-free straw bales located across the working side of the ROW would be removed during the day when vehicle traffic is present and would be replaced each night. Alternatively, drivable berms could be installed and maintained across the ROW in lieu of silt fence and/or straw bales.



For environmental review purposes only.

Figure 2.3-2
Entrega Pipeline Project
Conceptual Horizontal DirectionallyDrilled Waterbody Crossing

In general, equipment refueling and lubricating at waterbodies would take place in upland areas that are 100 feet or more from the edges of the water (500 feet on federal lands). When circumstances dictate that equipment refueling and lubricating would be necessary in or near waterbodies, Entrega would follow its SPCC Plan to address the handling of fuel and other hazardous materials.

After the pipeline is installed beneath the waterbody using one of the methods described above, restoration would begin. Waterbody banks would be restored to preconstruction contours or to a stable angle of repose. Rock riprap or gabion baskets (rock enclosed in wire bins) would be installed as necessary on steep waterbody banks in accordance with permit requirements. More stable banks would be seeded with native grasses and mulched or covered with erosion control fabric. Waterbody banks would be temporarily stabilized within 24 hours of completing in-stream construction. Sediment barriers, such as silt fence and/or certified weed-free straw bales or drivable berms would be maintained across the ROW at all waterbody approaches until permanent vegetation was established. Temporary equipment bridges would be removed following construction.

Wetland Crossings

Based on National Wetlands Inventory (NWI) map data, the proposed pipeline route would cross 96 wetlands, 45 in Colorado and 51 in Wyoming. Pipeline construction across wetlands would be similar to typical conventional upland cross-country construction procedures, with several modifications and limitations to reduce the potential for pipeline construction to affect wetland hydrology and soil structure. To minimize impacts to the environment, Entrega would cross wetlands using the procedures outlined in Entrega's Procedures (appendix B).

Entrega would use a 75-foot-wide construction ROW through wetlands. Additional temporary workspace areas would be required on both sides of wetlands to stage construction, fabricate the pipeline, and store materials. These additional temporary workspace areas would be located in upland areas a minimum of 10 feet from the wetland edge.

Construction equipment working in wetlands would be limited to that essential for ROW clearing, excavating the trench, fabricating and installing the pipeline, backfilling the trench, and restoring the ROW. In areas where there is no reasonable access to the ROW except through wetlands, non-essential equipment would be allowed to travel through wetlands only if the ground was firm enough or had been stabilized to avoid rutting. Otherwise, non-essential equipment would be allowed to travel through wetlands only once.

Clearing of vegetation in wetlands would be limited to trees and shrubs, which would be cut flush with the surface of the ground and removed from the wetland. To avoid excessive disruption of wetland soils and the native seed and rootstock within the wetland soils, stump removal, grading, topsoil segregation, and excavation would be limited to the area immediately over the trenchline. A limited amount of stump removal and grading could be conducted in other areas if dictated by safety-related concerns. Topsoil segregation over the trenchline would only occur if the wetland soils were not saturated at the time of construction.

During clearing, sediment barriers, such as silt fence and certified weed-free staked straw bales, would be installed and maintained adjacent to wetlands and within additional temporary workspace areas as necessary to minimize the potential for sediment runoff. Sediment barriers would be installed across the full width of the construction ROW at the base of slopes adjacent to wetland boundaries. Silt fence and/or certified weed-free straw bales installed across the working side of the ROW would be removed during the day when vehicle traffic was present and would be replaced each night. Alternatively, drivable berms could be installed and maintained across the ROW in lieu of silt fence or certified weed-free straw bales. Sediment barriers also would be installed within wetlands along the edge of the ROW, where necessary, to minimize the potential for sediment to run off the construction ROW and into wetland areas outside the work area.

The method of pipeline construction used in wetlands would depend largely on the stability of the soils at the time of construction. If wetland soils are not excessively saturated at the time of construction and can support construction equipment on equipment mats, timber riprap, or straw mats, construction would occur in a manner similar to conventional upland cross-country construction techniques. In unsaturated wetlands, topsoil from the trenchline would be stripped and stored separately from subsoil. Topsoil segregation generally would not be possible in saturated soils.

Where wetland soils were saturated and/or inundated, the pipeline could be installed using the push-pull technique. The push-pull technique would involve stringing and welding the pipeline outside of the wetland and excavating and backfilling the trench using a backhoe supported by equipment mats or timber riprap. The prefabricated pipeline would be installed in the wetland by equipping it with buoys and pushing or pulling it across the water-filled trench. After the pipeline is floated into place, the floats would be removed and the pipeline would sink into place. Most pipe installed in saturated wetlands would be coated with concrete or equipped with set-on weights to provide negative buoyancy.

Because little or no grading would occur in wetlands, restoration of contours would be accomplished during backfilling. Prior to backfilling, trench breakers would be installed where necessary to prevent the subsurface drainage of water from wetlands. Where topsoil has been segregated from subsoil, the subsoil would be backfilled first, followed by the topsoil. Topsoil would be replaced to the original ground level leaving no crown over the trenchline. In some areas where wetlands overlie rocky soils, the pipe would be padded with rock-free soil or sand before backfilling with native bedrock and soil. Equipment mats, timber riprap, gravel fill, geotextile fabric, and/or certified weed-free straw mats would be removed from wetlands following backfilling.

Where wetlands are located at the base of slopes, permanent slope breakers would be constructed across the ROW in upland areas adjacent to the wetland boundary. Temporary sediment barriers would be installed where necessary until revegetation of adjacent upland areas was successful. Once revegetation is successful, sediment barriers would be removed from the ROW and disposed of properly.

In wetlands where no standing water is present, the construction ROW would be seeded in accordance with the recommendations of the local soil conservation authorities or land management agency. Lime, mulch, and fertilizer would not be used in wetlands.

Blasting

Entrega has stated that limited blasting might be required in areas where competent shallow bedrock or boulders were encountered that could not be removed by conventional excavation methods. If blasting were required to clear the ROW and to fracture the ditch, strict safety precautions would be followed. Entrega would exercise extreme care to avoid damage to underground structures, cables, conduits, pipelines, and underground watercourses or springs. To protect property or livestock, Entrega would provide adequate notice to adjacent landowners or tenants in advance of blasting. Blasting activity would be performed during daylight hours and in compliance with federal, state, and local codes and ordinances and manufacturers' prescribed safety procedures and industry practices.

Residential Construction

Entrega identified only one residence located within 50 feet of the proposed construction ROW. This residence is located at MP 304.7 and is currently vacant. Entrega intends to acquire and remove the structure prior to construction, thereby avoiding construction constraints at this location.

In addition to the single residence, two commercial buildings were identified within 50 feet of the proposed construction work area. Entrega would develop site-specific construction plans to mitigate the impacts of construction on these commercial structures.

Fences and Grazing

Fences would be crossed or paralleled by the construction ROW. Entrega would contact grazing lessees prior to crossing any fence on public lands or any fence between public and private land, and would offer the lessee the opportunity to be present when the fence is cut so that the lessees can be satisfied that the fence is adequately braced and secured. The grazing permitees would be contacted prior to the start of construction and reclamation on their allotments. Before cutting the wires for pipeline construction, each fence crossed by the ROW would be braced and secured to prevent the slacking of the wire. To prevent the passage of livestock, the opening in the fenceline would be temporarily closed when construction crews left the area. If gaps in natural barriers used for livestock control were created by the pipeline construction, the gaps would be fenced according to the landowners or land management agency requirements. Whenever possible, a minimum of 10 feet of undisturbed area will be maintained where the pipeline parallels a fenceline.

All existing improvements, such as fences, gates, irrigation ditches, cattle guards, and reservoirs would be maintained during construction and repaired to pre-construction conditions or better. If pipelines transporting water for livestock and wildlife were damaged by construction activities, Entrega would repair the pipelines to the landowner or land management agency specifications. If needed, Entrega has committed to providing an emergency source of potable water.

2.3.3 Aboveground Facility Construction Procedures

Construction activities at each of the three compressor stations would follow a standard sequence of activities: clearing and grading, installing foundations for the compressor and control buildings, and erecting the structures to house the compressors and associated facilities. A mainline valve would be required at each station. In addition, a pipeline pig launcher and/or pig receiver facility would be installed at each of the compressor stations. Construction activities and the storage of building materials would be confined to the compressor station construction sites. **Figures 2.3-3** through **2.3-7** illustrate the locations of the proposed compressor, pigging, and metering stations in relation to surrounding topography and land uses.

The sites for the compressor stations would be cleared of vegetation and graded as necessary to create a level surface for the movement of construction vehicles and to prepare the area for the building foundations. Foundations would be constructed for the buildings, and soil would be stripped from the area of the building foundations.

Each compressor station would include two buildings: one utility building and one compressor building. The utility building would include control equipment to filter, measure, and regulate fuel gas. The compressor building at each station would house the compressors. The compressor building would be acoustically treated to attenuate sound. The natural gas piping, both above and below ground, would be installed and pressure-tested using methods similar to those used for the main pipeline. After testing is successfully completed, the piping would be tied in to the main pipeline. Piping installed below grade would be coated for corrosion protection prior to backfilling. In addition, all below grade facilities would be protected by a cathodic protection system. Before being put into service, compressors, controls, and safety devices would be checked and tested to ensure proper system operation and activation of safety mechanisms.

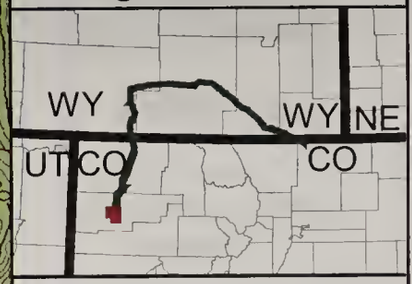
Each compressor station would require electricity and telephone facilities, which would be obtained from local services (except for Bighole, which would generate its own power). **Table 2.3-1** summarizes electrical power and distribution lines requirements.

After the completion of startup and testing, the compressor station sites would be graded and landscaped. A permanent security fence would be installed around each compressor station site. Because each of the compressor station sites would be located in remote, undeveloped areas and/or adjacent to existing commercial/industrial facilities, the station buildings would be designed to be consistent as possible with the character of the surrounding land uses. Because the construction of the stations is scheduled for completion in the fall of 2006, any landscaping would be postponed until the spring or early summer of 2007.

Where metering facilities and pig launchers and/or receivers are collocated with compressor stations, the metering and pigging facilities would be located entirely within the compressor station sites. Construction activities would include clearing, grading, trenching, installing piping, erecting buildings, fencing the facilities, cleanup, and restoration. The four meter stations at the Cheyenne Hub Metering Station would operate on locally provided power (**table 2.3-1**).

2-27

Regional View



125 0 125 Miles

LEGEND

- Proposed Compressor Station
- Proposed Pipeline
- Proposed Lateral
- Milepost
- Existing Access Road
- Proposed Interconnection

Note: Powerline easement is within station boundaries

1000 0 1000 Feet

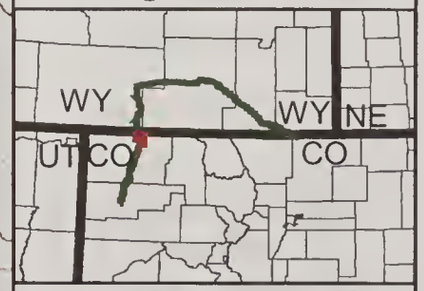
Entrega Pipeline Project

Figure 2.3-3

Meeker Hub Compressor Station

2/7/05

Regional View



LEGEND

- Proposed Compressor Station
- Proposed Pipeline
- Milepost
- Existing Access Road

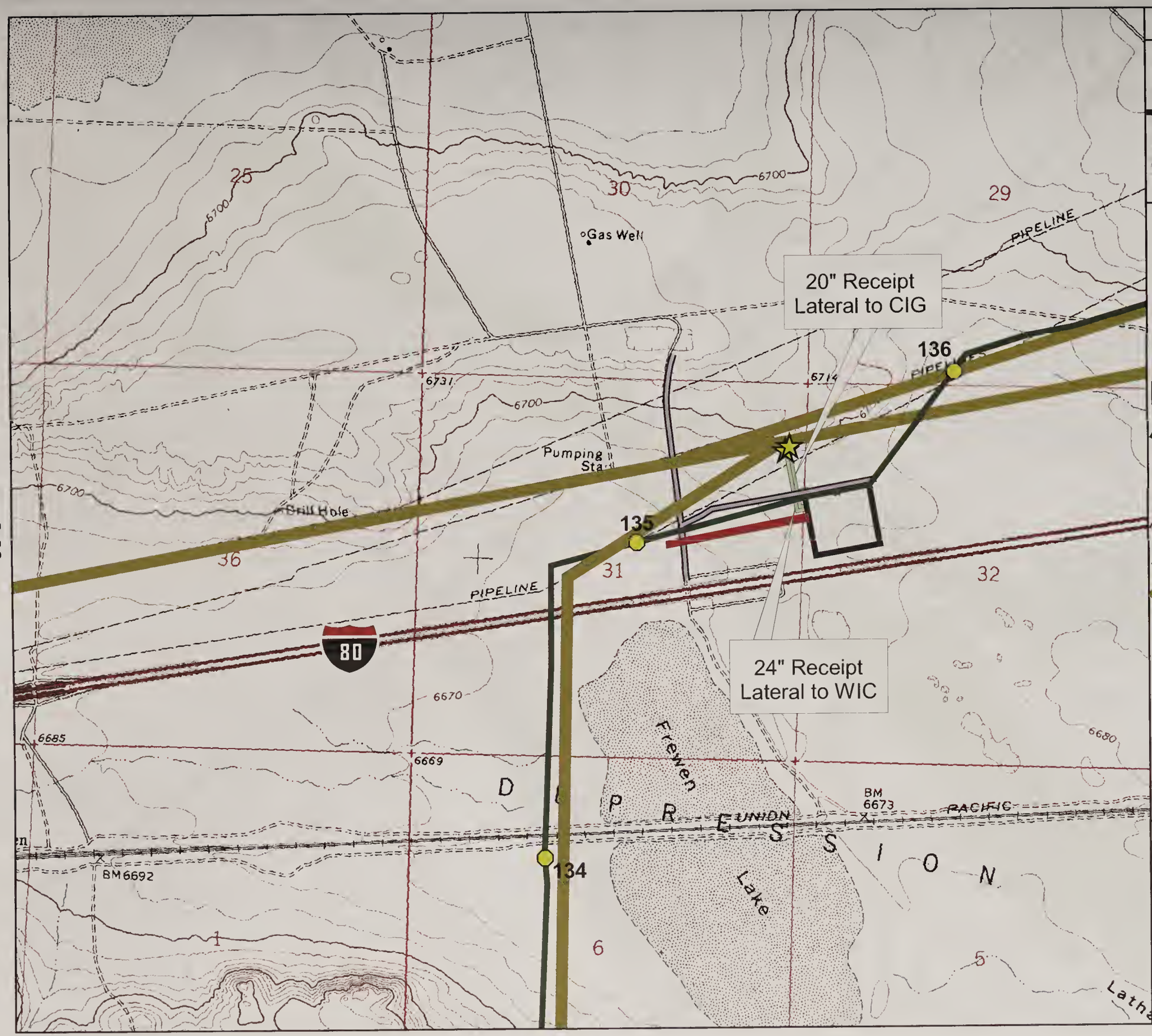
1000 0 1000 Feet

Entrega Pipeline Project

Figure 2.3-4

Bighole Compressor Station

2/7/05



Regional View



125 0 125 Miles

LEGEND

- Proposed Compressor Station
- Proposed Pipeline
- Pipeline Milepost
- Powerline Easement
- New Permanent Access Road
- Proposed Lateral
- Existing Pipeline Corridor
- Proposed Interconnection with Existing Pipeline

1000 0 1000 Feet

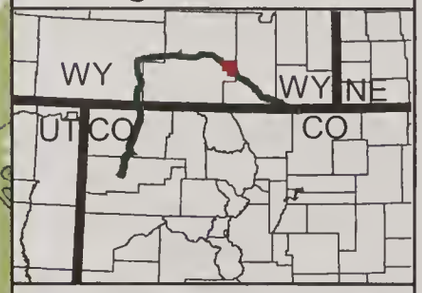
Entrega Pipeline Project

Figure 2.3-5

Wamsutter Compressor Station

2/8/05

Regional View



125 0 125 Miles

LEGEND

- Proposed Pigging Station
- Proposed Pipeline
- Milepost
- New Permanent Access Road

1000 0 1000 Feet

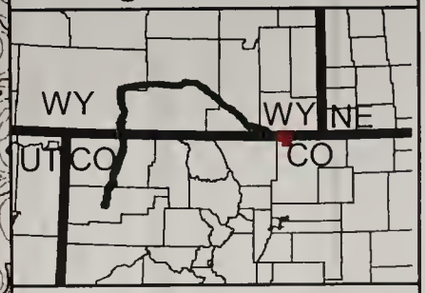
Entrega Pipeline Project

Figure 2.3-6

Arlington Pigging Station

2/7/05

Regional View



125 0 125 Miles

20" Delivery Lateral to CIG

24" Delivery Lateral to Cheyenne Plains

24" Delivery Lateral to Trailblazer

20" Delivery Lateral to PSCo

325

326

327

85

PIPELINE

Happy Hollow Windmill

Camp

LEGEND

- Proposed Metering Station
- Proposed Pipeline
- Milepost
- Powerline Easement
- Existing Aboveground Facility
- Proposed Lateral
- Existing Pipeline Corridor
- Proposed Interconnection with Existing Pipeline

1000 0 1000 Feet

Entrega Pipeline Project

Figure 2.3-7

Cheyenne Hub Metering Station

2/7/05

Table 2.3-1
Summary of Electrical Power Supply Requirements for Compressor and Meter Stations

Station	Utility	Phase I Service Description	Phase II Service Description
Meeker Hub Compressor Station	White River Electric Association	One span with 300 yards of 3-phase 25-kilovolt (kV) line and single-phase transformation	Single-phase transformer would be replaced by three-phase transformer
Bighole Compressor Station	Not applicable	No work required in Phase I	Entrega would install power generation at facility since nearest powerline is 18 miles away
Wamsutter Compressor Station	Pacific Power-Rawlins District	1 mile of 3-phase 34.5-kV line and single-phase transformation	Single-phase transformer would be replaced by three-phase transformer
Cheyenne Hub Metering Station	Poudre Valley Electric Association	0.25 mile of single-phase 7.2-kV line and single-phase transformation	No work required in Phase II

Mainline valve construction would be concurrent with the construction of the pipeline with valves installed at spacings as required by the DOT (49 CFR 192). Where practical, mainline valves would be typically located near public roads to allow year-round access. Permanent access roads or approaches would be constructed within the permanent ROW to each mainline valve site.

The construction of pig launchers and receivers would be concurrent with the construction of the metering stations and mainline valves. Activities such as clearing, grading, trenching, and clean-up and restoration would occur simultaneously with construction activities associated with the pipeline and compressor stations.

2.3.4 Corrosion Protection and Detection Systems

An external coating would be applied to the pipeline and all buried facilities to protect against corrosion. Cathodic protection would be provided by an impressed current. Entrega would utilize an internal coating on the pipeline to reduce the effect of the pipe roughness on the flow of gas. This internal coating would improve transportation efficiency, reduce potential for internal pipe corrosion prior to installation, and reduce the amount of iron oxide introduced into the hydrostatic test water.

2.4 Construction Workforce and Schedule

Entrega proposes to begin construction in June 2005. The proposed construction period for Phase I (the pipeline, metering stations, pigging facilities, and mainline valves) would start in June 2005 and would last 6 months. Entrega's proposes to complete Phase I construction and begin service by January 1, 2006. In Phase II of the project, Entrega would construct the three compressor stations beginning in August 2006. Entrega intends to have Phase II in-service by April 2007.

Entrega anticipates a peak workforce of approximately 2,000 to 2,200 construction personnel during the summer and fall of 2005. Construction personnel would consist of Entrega employees, contractor employees, construction inspection staff, and environmental inspection staff. Entrega is planning to build the pipeline in four spreads, with construction activity occurring simultaneously in each spread. Entrega anticipates between 425 and 550 construction and inspection personnel associated with each spread. In addition, seven metering stations will be built, one at the Meeker Hub Compressor Station, two near Wamsutter and four at the Cheyenne Hub Metering Station. Construction of the metering stations would require 50 to 75 workers for a relatively short period. Entrega anticipates about 100 individuals across the project to be involved in material transportation and unloading. At this time, Entrega has proposed to commence construction of the pipeline and metering stations in June 2005, with two spreads beginning in June, with construction starting on the remaining two spreads 1 month later. Each spread will require 4 to 6 months to complete, with all work to be completed by the end of the year. The construction timetable for the metering stations has not been specified.

Construction of each compressor station during Phase II would require approximately 125 to 175 additional workers. Entrega has proposed to commence construction of the three compressor stations beginning in August 2006.

During construction, personnel would work during daylight hours, 6 to 7 days per week depending on schedule constraints. **Table 2.4-1** outlines Entrega's proposed construction schedule and workforce requirements by spread for the proposed project.

Table 2.4-1
Pipeline Construction Workforce and Proposed Schedule

Phase/Spread	Associated Aboveground Facilities	Begin MP	End MP	Estimated Workforce	Proposed Schedule	County and State
Phase I						
1	Meeker Hub metering facilities	-0.5	56.0	475 to 550	June 2 to October 31, 2005	Rio Blanco and Moffat, Colorado
2	N/A	56.0	136.0	425 to 475	June 2 to October 31, 2005	Moffat, Colorado; Sweetwater, Wyoming
3	Wamsutter metering facilities	135.5	231.0	475 to 550	July 1 to December 15, 2005	Sweetwater and Carbon, Wyoming
4	Arlington Pigging Station; Cheyenne Hub Metering Station	231.0	327.0	475 to 550	July 1 to December 15, 2005	Carbon, Albany, and Laramie, Wyoming; Larimer and Weld, Colorado
Phase II						
	Compressor Stations (Meeker Hub, Bighole, and Wamsutter)	0.0, 76.3, and 135.5		300 to 400	2006	Rio Blanco and Moffat, Colorado; Sweetwater, Wyoming

Entrega, through its construction contractors and subcontractors, would attempt to hire temporary construction staff from the local population. At peak workforce, Entrega anticipates that up to about 20 percent of the total construction workforce could be hired locally (currently residing in Colorado or

Wyoming). The remaining portion of the workforce (80 percent or more) would include non-local personnel. Based on the specialized nature of the position, environmental inspection staff would most likely consist entirely of non-local employees.

Only work vehicles would be allowed on the construction ROW or additional temporary workspace areas during construction. Equipment operators would drive a company-owned or personal pick-up truck to the construction site. Parking would be limited to the construction ROW, additional temporary workspace areas, or along existing authorized access roads. Adjacent ROWs would not be used for parking. Construction workers would not be permitted to travel cross-country on public lands during construction of the project.

2.5 Environmental Inspection, Compliance Monitoring, and Post-Approval Variances

2.5.1 Environmental Inspection

Under the NGA, the FERC may impose conditions on any Certificate it grants for the EPP. These conditions could include additional requirements and mitigation measures recommended in this EIS to minimize the environmental impact that would result from the construction and operation of the project (see chapters 4.0 and 5.0). We will recommend that these additional requirements and mitigation measures (bold type in the text) be included as specific conditions to any approving Certificate issued for the EPP. We will also recommend that Entrega be required to implement the mitigation measures that it has proposed as part of the project unless specifically modified by other Certificate conditions (see recommendation 1 in section 5.5).

In accordance with the MLA, the BLM would require Entrega to furnish a bond, or other security, to ensure that Entrega would comply with the terms and conditions of the BLM's ROW grant. While there would be some jurisdictional differences between the FERC's and the BLM's requirements, the environmental inspection and compliance monitoring programs for the EPP would address requirements placed on the project by the federal and other agencies.

Entrega proposes to assign at least two environmental inspectors (EIs) to each construction spread. The EIs would likely be hired from a qualified third-party contractor. The responsibilities of the EIs are outlined in section II of Entrega's Plan (see appendix A) and would include ensuring that the Certificate and environmental conditions attached to other permits and authorizations are met. During the construction phase, Entrega's EIs would inspect all construction and mitigation activities to ensure compliance with the requirements of environmental plans, permits, and conditions. EIs may also oversee cultural resource monitors and/or biological monitors that may be required to monitor and evaluate construction impacts on resources as specified in this EIS.

The lengths of Entrega's construction spreads range from 90.5 to 100 miles on Segment 2 to 57 to 79 miles on Segment 1 (although the 57-mile-long interval on Segment 1 would actually be a series of smaller spreads focusing on difficult terrain, river crossings, etc., and constructing simultaneously). We believe that more than two EIs would be necessary to adequately inspect all construction and mitigation activities and perform the other duties outlined above. Therefore, **we recommend that Entrega employ a team of EIs (i.e., 3 or more) on each construction spread. The EIs shall be:**

- **responsible for monitoring and ensuring compliance with all mitigation measures required by this Order and other grants, permits, certificates, or other authorizing documents;**

- **responsible for evaluating the construction contractor's implementation of the environmental mitigation measures required in the contract and any other authorizing document;**

- **empowered to order correction of acts that violate the environmental conditions of this Order, and any other authorizing document;**

- **a full-time position, separate from all other activity inspectors;**

- **responsible for documenting compliance with the environmental conditions of this Order, as well as any environmental conditions/permit requirements imposed by other federal, state, or local agencies; and**

- **responsible for maintaining status reports.**

Inspectors from the FERC and BLM would also conduct field inspections during construction. Other federal and state agencies may also conduct oversight of inspection to the extent determined necessary by the individual agency.

After construction is completed, the FERC and BLM would continue to conduct oversight inspection and monitoring. If it is determined that any of the proposed monitoring timeframes are not adequate to assess the success of restoration, Entrega would be required to extend its post-construction monitoring programs. The BLM would retain Entrega's bond or other security until the BLM is satisfied with Entrega's reclamation efforts.

2.5.2 Compliance Monitoring

The BLM has indicated that it intends to require a separate compliance monitoring program to evaluate Entrega's environmental inspection program during construction and insure compliance with the terms and conditions of the BLM ROW grant. We believe that a joint third-party independent Environmental Compliance Monitoring and Reporting Program (ECMR Program) would provide a number of benefits, both to the agencies themselves and to Entrega, as well. The overall objective of an ECMR Program would be twofold: to assess environmental compliance during construction in order to achieve a high level of environmental compliance throughout the project, and to assist the FERC and BLM staffs in screening and processing variance requests during construction.

The joint ECMR Program would involve the use of full-time third-party compliance monitors representing both agencies at each construction spread to monitor compliance with project mitigation measures and requirements throughout construction. These monitors would provide continuous feedback on compliance issues to both agencies, as well as to Entrega's personnel, and track and document progress of

construction by the preparation and submittal of reports to the FERC and BLM staffs on a regular and timely basis.

2.5.3 Post-Approval Variance Process

Surface disturbance locations and acreages identified in this EIS are anticipated to be sufficient for the construction and operation (including maintenance) of the project and all ancillary improvements. However, route realignments and other project refinements often continue past the project review phase and into the construction phase. As a result, work area locations and disturbed acreages documented in the EIS often change after project approval. These changes frequently involve minor route realignments or moving approved temporary workspace, adding new temporary workspace, and adding access routes to work areas and associated temporary use areas. This section describes the procedure used for assessing impact on workspace areas outside those evaluated in this EIS and for approving their use.

Subsequent to project approval, when work areas outside those evaluated in this EIS are found to be needed, additional inventory and evaluation would be performed to ensure that impact on biological, cultural, and other resources would be avoided or minimized to the maximum extent practicable. New workspace location and survey results would be documented and forwarded to the FERC (and the BLM, as applicable) in the form of a "variance request;" one of the two federal agencies would take the lead on reviewing the request, depending on the ownership status of the subject land.[2] Appropriate agency consultations/approvals would be conducted/obtained prior to approval of the variance. At the conclusion of the project, as-built drawings would be provided to the FERC and BLM.

2.6 Operation and Maintenance

Entrega would operate and maintain the project facilities in accordance with the DOT regulations in 49 CFR 192 and other applicable federal and state regulations. Operation and maintenance of the pipeline system would, in most cases, be accomplished by Entrega personnel. Entrega estimates that operation of the pipeline would require 8 to 10 additional employees. Operation of the pipeline would require access along the pipeline ROW by Entrega personnel. While Entrega would make an effort to notify landowners prior to entering private property, landowner notification is not required for entry along the ROW, particularly in emergency situations.

2.6.1 ROW Monitoring and Maintenance

In order to maintain accessibility of the ROW and to accommodate pipeline integrity surveys, vegetation along the pipeline ROW would be periodically cleared over the pipeline. In most areas, the ROW would be maintained in an herbaceous state. Large trees would be removed from the permanent ROW. Entrega would use only mechanical mowing or cutting along its ROW for normal vegetation maintenance.

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[2] Recommendation 5 in section 5.5 illustrates our approach to considering variance requests subsequent to project authorization.

Noxious weeds and invasive plant monitoring and control activities would occur during routine ROW monitoring and maintenance activities. Noxious weeds discovered within the ROW would be controlled according to the measures specified in the Weed Management Plan (see appendix D).

In the future, pipeline integrity surveys and vegetation maintenance could identify areas on the ROW where permanent erosion control devices need to be repaired or additional erosion control devices may be needed. If problem areas were evident, erosion control devices would be repaired or installed as necessary and the ROW would be stabilized to prevent future degradation.

In the vicinity of waterbodies, wetlands, and upland areas, Entrega would adhere to the operation and maintenance procedures described in Entrega's Plan and Procedures (appendices A and B). Entrega also has committed to adhere to the maintenance commitments made in its POD and appendices for the BLM. Operation and maintenance procedures, including record keeping, would be performed in accordance with the DOT requirements.

2.6.2 Pipeline Integrity

Entrega's pipeline facilities would be operated and maintained in accordance with the federal safety standards (49 CFR 192). Operation and maintenance of the EPP facilities would be performed by or at the direction of Entrega. The pipeline would be inspected periodically from the air and on foot as operating conditions permit, but no less frequently than as required by 49 CFR 192. These surveillance activities would provide information on possible encroachments and nearby construction activities, erosion, exposed pipe, and other potential concerns that may affect the safety and operation of the pipeline. Evidence of population changes would be monitored and class locations changed as necessary. Mainline valves also would be inspected annually and the results documented.

2.7 Future Plans and Abandonment

Entrega notes that the EPP would be capable of transporting up to 2.0 Bcfd between Wamsutter and the Cheyenne Hub Metering Station by installing about 11,000 horsepower of additional compression at the Wamsutter Compressor Station and about 14,000 horsepower at a new Arlington Compressor Station (adjacent to the site of the proposed Arlington Pigging Station). Even greater volumes could be transported between Meeker and the Cheyenne Hub Metering Station by installing more horsepower at proposed compressor station sites and at new station sites along the system. However, Entrega has no plans to expand the system or increase its capacity at the present time. If, in Entrega's judgment, future market demands warrant expansion of the EPP, Entrega would file an appropriate application with the FERC at that time.

Properly maintained, the proposed pipeline is expected to operate for 50 or more years. If and when Entrega abandons any of the proposed facilities, the abandonment would be subject to separate approvals by the FERC, the BLM, and other land managing agencies. The FERC review would be conducted under section 7(b) of the NGA. On federal lands, the BLM would require Entrega to submit an abandonment plan at least 90 days prior to anticipated abandonment. Entrega has no plans for abandonment of the pipeline system.

The FERC typically allows a buried pipeline that has reached the end of its service life to be internally cleaned, purged of natural gas, isolated from interconnections with other pipelines, and sealed without removing the pipe from underground. We believe that this approach generally minimizes surface disturbance and other potential environmental impact. The aboveground pipeline at compressor and meter stations would be completely removed, including all related aboveground equipment and foundations, and the station sites restored to as near original condition as possible. The disposition of pipeline facilities on federal lands would depend on decisions made in the abandonment plan discussed above.

Upon abandonment of the pipeline, in part or in whole, the ROWs associated with the abandoned facilities would normally be returned to the landowners/land management agencies according to the specific easement agreements between the landowners/land managing agencies. However, on federal lands, the pipeline ROW could be used for other utility ROW (e.g., fiber optic lines) depending upon future decisions made by the BLM.

2.8 Permits, Approvals, and Regulatory Requirements

As federal agencies, the FERC, BLM, and FWS are required to comply with a number of regulatory statutes, including, but not limited to, the NEPA, the ESA, and the National Historic Preservation Act of 1966 (NHPA). In addition, the BLM will review the proposed project and facilities and make a determination whether or not the project would conform with its own statutory requirements and regulatory frameworks. Because the BLM administers federally owned lands, it has additional permitting requirements under other rules and regulations, such as the Federal Land Policy and Management Act, Archaeological Resources Protection Act (ARPA), and/or Native American Graves Protection and Repatriation Act.

Federal, state, or local agencies that have permit, approval, or consultation authority for portions of the proposed project are identified in **table 2.8-1**. The Commission states in its orders that applicants should cooperate with state and local agencies. However, any state or local permits issued with respect to jurisdictional facilities must be consistent with the conditions of any Certificate the Commission may issue. Although the Commission encourages cooperation between interstate pipelines and local authorities, this does not mean that state and local agencies, through application of state and local laws, may prohibit or unreasonably delay the construction or operation of facilities approved by the Commission.

Section 7 of the ESA, as amended, states that any project authorized, funded, or conducted by any federal agencies (e.g., the Commission) should not "...jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined...to be critical..." [16 USC § 1536(a)(2)(1988)]. The Commission, or the applicant as a non-federal party, is required to consult with the FWS to determine whether any federally listed or proposed endangered or threatened species or their designated critical habitat occur in the vicinity of the proposed project. If, upon review of existing data, the Commission determines that these species or habitats may be affected by the proposed project, the Commission is required to prepare a Biological Assessment (BA) to identify the nature and extent of adverse impact, and to recommend mitigation measures that would avoid the habitat and/or species or that would reduce potential impact to acceptable levels. If, however, the Commission determines that no federally listed or proposed endangered or threatened species or their

Table 2.8-1
Major Permits, Approvals, and Consultations for the Entrega Pipeline Project

Agency	Permit or Consultation/Authority	Agency Action
FEDERAL		
Advisory Council on Historic Preservation (ACHP)	Section 106, National Historic Preservation Act (NHPA)	Provide comments on the proposed undertaking, as necessary.
Federal Energy Regulatory Commission (FERC)	Certificate of Public Convenience and Necessity (Natural Gas Act)	Determine whether the construction and operation of the proposed project is in the public interest. Consider issuance of a certificate.
U.S. Department of Defense		
Corps of Engineers (COE) - Sacramento and Omaha Districts	Section 404, CWA Individual Permit (Stream and Wetland Crossings)	Consider issuance of Section 404 individual permits for the placement of dredge or fill material in waters of the U.S., including wetlands.
	Section 404, Clean Water Act (CWA) Nationwide Permit	Consider issuance of Section 404 nationwide permits, as applicable.
U.S. Department of Interior		
Bureau of Land Management (BLM)	Archaeological Resources Protection Act (ARPA) Permit	Consider issuance of cultural resource use permit to excavate or remove cultural resources on federal lands.
	ROW Grant and Temporary Use Permit under Section 28 (Mineral Leasing Act [MLA])	Consider approval of ROW grant and temporary use permits for the portions of the project that would encroach on federal lands.
	Plan of Development (POD)	Consider approval of Entrega's detailed plan for construction, operation, and maintenance.
	Notice to Proceed	Following issuance of a ROW grant and approval of Entrega's POD, consider the issuance of a Notice to Proceed with project development and mitigation activities.
Fish and Wildlife Service (FWS)	Endangered Species Act (ESA), Section 7 Consultation, Biological Opinion	Consider lead agency finding of an impact on federally listed or proposed species. Provide Biological Opinion if the project is likely to adversely affect federally listed or proposed species or their habitats.
	Fish and Wildlife Coordination Act	Provide comments to prevent the loss of and damage to wildlife resources.
U.S. Department of Transportation (DOT)		
Federal Highway Administration	Encroachment Permit	Consider issuance of permits for the crossing of federally funded highways.

Table 2.8-1 (Continued)

Agency	Permit or Consultation/Authority	Agency Action
U.S. Department of Treasury Bureau of Alcohol, Tobacco, and Firearms	Explosive User's Permit	Consider issuance of a permit to purchase, store, and use explosives for site preparation during pipeline construction.
U.S. Environmental Protection Agency (EPA), Region VIII	Section 401, CWA, Water Quality Certification	In conjunction with states, consider the issuance of water use and crossing permits.
	Section 402, CWA, National Pollutant Discharge Elimination System (NPDES)	In conjunction with states, review and issue NPDES permit for the discharge of hydrostatic test water.
	Section 404, CWA	Review CWA, Section 404 applications for wetlands dredge-and-fill applications for the COE with 404 veto power for wetland permits issued by the COE.
	Stormwater Discharge Permit	In conjunction with states, review and issue stormwater permit for activities associated with pipeline and aboveground facilities construction.
COLORADO		
Colorado Historical Society	Consultation under Section 106, NHPA	Review and comment on activities potentially affecting cultural resources.
Department of Natural Resources		
Division of Water Resources	Section 401, CWA, Water Quality Certification	Consider issuance of a permit for stream and wetland crossings.
	NPDES Temporary Discharge Permit	Consider issuance of a permit regulating hydrostatic test water discharge, and construction dewatering to waters of the state.
	NPDES Stormwater Discharge Permit	Consider the issuance of a permit regulating discharge of stormwater from the construction work area.
Division of Wildlife	Consultation	Review and comment on activities potentially affecting wildlife, particularly state-listed species and potential impacts to state lands.
Department of Public Health and Environment		
Air Quality Control Division	Permit to construct	Consider issuance of a permit to construct facilities with the potential for air emissions.
	Permit to operate	Consider issuance of a permit to operate facilities with the potential for air emissions.

Table 2.8-1 (Continued)

Agency	Permit or Consultation/Authority	Agency Action
Department of Transportation	Encroachment Permits	Consider issuance of permits for encroachment on state highways.
State Land	ROW Permit	Consider issuance of a permit to construct pipeline facilities on state lands.
County Road Departments	Encroachment Permits	Consider issuance of permits for encroachment on county roads.
WYOMING		
Department of Environmental Quality		
Air Quality Division	Permit to construct	Consider issuance of a permit to construct facilities with the potential for air emissions.
	Permit to operate	Consider issuance of a permit to operate facilities with the potential for air emissions.
Water Quality Division	Section 401, CWA, Water Quality Certification	Consider issuance of a permit for stream and wetland crossings.
	NPDES Temporary Discharge Permit	Consider issuance of a permit regulating hydrostatic test water discharge, and construction dewatering to waters of the state.
	NPDES Stormwater Discharge Permit	Consider issuance of a permit regulating discharge of stormwater from the construction work area.
	Water Appropriation Permit	Consider issuance of a permit for water appropriations for hydrostatic test water.
Department of Transportation	Encroachment permits	Consider issuance of permits for encroachment on state highways.
Game and Fish Department	Consultation	Review and comment on activities potentially affecting wildlife, particularly state-listed species and potential impacts to state lands.
State Historic Preservation Office	Consultation under Section 106, NHPA	Review and comment on activities potentially affecting cultural resources.
State Lands and Investments	Grant of Easement – Non-roadway	Consider issuance of a permit to construct pipeline facilities on state lands.
County Road Departments	Encroachment Permits	Consider issuance of permits for encroachment on county roads.

designated critical habitat would be affected by the proposed project, no further action is necessary. We are requesting that the FWS consider this draft EIS as our BA for the proposed project. See section 3.6 of this draft EIS for the status of this review.

The BLM would prepare a ROD to authorize an additional pipeline within new or existing corridors through BLM-administered lands in Colorado and Wyoming. As discussed above, the BLM would adopt this EIS per 40 CFR 1506.3 to meet its responsibilities under NEPA in considering Entrega's application for a ROW grant. Under Section 185(f) of the MLA, the BLM has the authority to issue the ROW grant for all affected federal lands.

Section 106 of the NHPA, as amended, requires the FERC to take into account the effects of its undertakings on historic properties and to afford the Advisory Council on Historic Preservation (ACHP) an opportunity to comment. Historic properties are prehistoric or historic districts, sites, buildings, structures, objects, or properties of traditional religious or cultural importance, which are listed or eligible for listing on the National Register of Historic Places (NRHP). The Commission is using the services of Entrega, as an applicant, to prepare information, analyses, and recommendations necessary to comply with Section 106, according to the ACHP's regulations at 36 CFR 800.

Entrega must comply with Sections 401, 402, and 404 of the CWA. Water quality certification (Section 401) has been delegated to the jurisdiction of individual state agencies, with review by the U.S. Environmental Protection Agency (EPA). Water used for hydrostatic testing that is point-source discharged into waterbodies would require a NPDES permit issued by the state with EPA oversight.

The COE has responsibility for determining compliance with all regulatory requirements associated with Section 401 of the CWA. Entrega intends to submit its Section 404 permit applications to the appropriate COE District offices in 2005.

Ambient air quality is protected by federal regulations under the Clean Air Act (CAA). These regulations include compliance under the New Source Performance Standards (NSPS) and the requirements for the Prevention of Significant Deterioration (PSD). The federal permitting process for the CAA has been delegated to individual state agencies. Although applications are reviewed by both states and the EPA, the states would determine the need for NSPS or a PSD permit.

ENVIRONMENTAL ANALYSIS

CHAPTER 3

3.0 ENVIRONMENTAL ANALYSIS

3.1 Geology

3.1.1 Geology and Physiography

The proposed EPP route would cross parts of three major physiographic provinces: the Wyoming Basin Province, the Southern Rocky Mountains Province, and the Great Plains Province (Fenneman and Johnson 1946; USGS 1985). The Wyoming Basin Province and Southern Rocky Mountain provinces generally consist of mountain ranges separated by broad basins, while the Great Plains Province is a remnant fluvial plain. **Table 3.1-1** summarizes by MP the physiographic province, section, and geology along the proposed pipeline route.

Construction of the proposed project facilities would not materially alter the geologic and physiographic conditions or worsen existing unfavorable geologic conditions in the area. Construction effects would include disturbances to the natural topography along the ROW and aboveground facilities due to grading and trenching activities. Upon completion of construction, Entrega would restore topographic contours and drainage patterns as closely as possible to their pre-construction condition. Operation of the pipeline and its associated facilities would not affect the geologic and physiographic conditions in the project area.

3.1.2 Mineral Resources

Potentially Exploitable Resources

In Colorado, known oil and gas producing reservoirs underlay approximately 90 percent of the proposed pipeline route and aboveground facilities and approximately 45 percent of the proposed project lies within an area of known oil shale-bearing strata in the Piceance Basin. Coal-bearing formations that are potentially mineable (both surficial and sub-surface sources) would underlay approximately 60 percent of the proposed pipeline route through Colorado, in Rio Blanco and Moffat Counties (Colorado Division of Minerals and Geology 2003). These areas also are potentially capable of producing economic quantities of coal-bed methane (EPA 2002).

In Wyoming, approximately 80 percent of the EPP in Wyoming would occur in sedimentary basins with known oil and gas producing regions. Producing fields in those regions are clustered around the proposed Wamsutter Compressor Station in Sweetwater and Carbon Counties. Other producing fields lie near the proposed project in the Laramie Basin, in western Albany County (De Bruin 2002). Approximately 22 percent of the proposed route would lie within an area of known oil shale-bearing strata extending from the Wyoming-Colorado border north to Wamsutter, in the Washakie Basin. Approximately 60 percent of the proposed pipeline route would cross surface and subsurface coal-bearing formations that are potentially mineable in the Green River, Hanna and Rock Creek Coal Fields of Sweetwater, Carbon, and Albany Counties (Glass and Roberts 1980; Jones 1991; Case et al. 1998a).

Typically, the pipeline trench would be about 6 to 7 feet deep to account for the pipe and adequate cover. Limited blasting could be required in areas where competent shallow bedrock or boulders were encountered

Table 3.1-1
Geologic Conditions Along the Proposed Pipeline Route

Physiographic Province/ Section	MP Range	Geology	Topography/Elevation	Miles of Shallow Hard Bedrock[1]
COLORADO				
Wyoming Basin	**-0.5 to 85.8**			
Piceance Basin	-0.5 to 39.4	Alluvial, colluvial, and mud flow Quaternary deposits along drainages. Tertiary and Cretaceous claystone, shale, siltstone, and sandstone bedrock.	Approximately 6,100 feet above mean sea level (msl) to 6,540 feet above msl. Low relief along pipeline route, with intermittent and adjacent high angle slopes and adjacent hills to 800 feet above drainage floors.	12.5
Axial Basin	39.4 to 54.5	Tertiary siltstone and sandstone bedrock with Quaternary alluvium along drainages.	Approximately 5,970 feet above msl to 8,220 feet above msl. Variable moderate to high relief.	0.0
Sand Wash Basin	54.5 to 85.8	Alluvial, colluvial, and mud flow Quaternary deposits along drainages. Tertiary and Cretaceous claystone, shale, siltstone, and sandstone bedrock.	Approximately 6,000 feet above msl to 6,900 feet above msl. Moderate to low relief.	0.0
Great Plains	**318.5 to 327.0**			
Denver Basin	318.5 to 327.0	Light colored tuffaceous claystones, sandstones, and conglomerates of the Miocene Ogallala Formation with minor Quaternary alluvium along drainages.	Approximately 5,935 feet above msl to 6,220 feet above msl. Low relief.	0.4
			Colorado Total	**12.9**
WYOMING				
Wyoming Basin	**85.8 to 214.0**			
Washakie Basin	85.8 to 133.5	Alluvial, colluvial Quaternary deposits along drainages. Tertiary oil shales and marlstones, claystone, sandstone, and conglomerate bedrock.	Approximately 6,200 feet above msl to 7,010 feet above msl. Variable relief.	2.7
Wamsutter Arch	133.5 to 192.8	Gravel, piedmont and fan Quaternary deposits (MPs 149.1 to 155.1). Otherwise dominated by Tertiary to Cretaceous sandstone, siltstone, and shale bedrock with occasional thin coal or carbonaceous beds.	Approximately 6,520 feet above msl to 7,100 feet above msl. Low relief.	0.5
Saratoga Valley	192.8 to 214.0	Miocene tuffaceous sandstone and white marl with Tertiary to Cretaceous sandstone, siltstone, and shale bedrock with occasional thin coal or carbonaceous beds.	Approximately 6,500 feet above msl to 7,220 feet above msl. Low relief.	0.7

Table 3.1-1 (Continued)

Physiographic Province/ Section	MP Range	Geology	Topography/Elevation	Miles of Shallow Hard Bedrock[1]
Southern Rocky Mountains	**214.0 to 305.0**			
Medicine Bow Mountains	214.0 to 246.4	Minor alluvial, colluvial and mud flow Quaternary deposits along drainages. Tertiary sandstone, conglomerates, shales, and coal with occasional massive quartzite boulders and Cretaceous sandstone, siltstone, and shale bedrock with occasional thin coal or carbonaceous beds.	Approximately 6,965 feet above msl to 7,940 feet above msl. Variable relief.	1.5
Laramie Basin	246.4 to 284.0	Mostly gravel, piedmont, and fan Quaternary deposits with Quaternary alluvium and colluvium. Cretaceous gray sandstone and soft gray shale bedrock with occasional bentonitic clay seams.	Approximately 7,140 feet above msl to 7,800 feet above msl. Low relief.	0.2
Laramie Mountains	284.0 to 305.0	Mostly Permian and Pennsylvanian thick-bedded sandstone with some interbedded limestone along western flanks, followed by Middle Proterozoic granite bedrock in the core area with some Early Proterozoic meta-sedimentary and meta-volcanic bedrock along the eastern flank.	Approximately 7,380 feet above msl to 8,230 feet above msl. Variable, moderate relief.	16.1
Great Plains	**305.0 to 318.5**			
Denver Basin	305.0 to 318.5	Light colored tuffaceous claystones, sandstones, and conglomerates of the Miocene Ogallala Formation with minor Quaternary alluvium along drainages.	Approximately 6,150 feet above msl to 7,405 feet above msl. Moderate relief.	3.4
			Wyoming Total	**25.1**

[1]Shallow bedrock locations (within 5 feet of the surface) were determined using the State Soil Geographic (STATSGO) database (NRCS 1995). MPs represent areas where 15 percent or more of the map unit comprises shallow to bedrock soils.

Source: Fenneman and Johnson 1946; USGS 1985; Geological Survey of Colorado 2003a.

that could not be removed by conventional excavation. **Table 3.1-1** identifies those areas along the proposed pipeline route in Colorado and Wyoming where shallow bedrock would be anticipated. Additional discussion of blasting impacts is presented in section 3.3.1.

None of the oil and gas wells identified would be located within the proposed pipeline construction ROW. However, blasting operations could potentially damage nearby oil and gas wells, and trenching could encounter underground gathering pipelines associated with the wells. Because oil and gas is generally produced from depths of more than 1,000 feet, construction of the pipeline would not be expected to affect the ability of the wells to produce oil and/or natural gas. Rather, any construction-related damage that could occur would be limited to surface or near-surface components of the wells and gathering systems, which could temporarily disrupt production until repairs were made. Potential affects of blasting on nearby wells would be mitigated by implementing the project-specific Blasting Specification Plan (Entrega 2004a) as well as additional mitigation measures identified in section 3.3.1. Prior to construction, Entrega would identify any associated underground gathering lines in the project construction ROW and would either avoid piping, or take appropriate precautions to protect the integrity of such facilities.

Mining and Mineral Resource Operations

Anywhere the route would follow drainages in both Colorado and Wyoming, the surface materials (alluvium, colluvium and fan deposits) are potentially mineable for industrial minerals, such as sand and gravel (Harris 1992, 1996). Other areas of known or potential mineral resources include uranium in the Medicine Bow Mountains, and copper, gypsum, carbonates, and granite along the flanks of the Laramie Range (U.S. Department of the Interior [USDI] 2002).

Mining and mineral recovery operations within 1,500 feet of the proposed project were identified using aerial photography and project alignment sheets, USGS topographic maps, information on mineral operations from the National Atlas of the United States (USDI 2002), state mineral publications, and the USGS Minerals Yearbook (USGS 2003). In Colorado, mineral resource operations near the proposed project consist of one active sand and gravel pit and nine oil and gas wells (USDI 2002; USGS 2003). In Wyoming, 11 sand and gravel operations (5 active, 6 inactive), 1 underground coal mine (inactive), 1 quarry (active), and 66 oil and/or gas wells, would be located within 1,500 feet of the proposed project (USDI 2002; USGS 2003).

The only active operation intercepted by the pipeline route would be a Union Pacific quarry between MPs 297.4 and 298.1. The pipeline would cross a reclaimed area with active mining approximately 200 feet south of the proposed pipeline route. A field survey confirmed that construction of the pipeline through this reclaimed area would not represent an engineering or environmental concern that would require a reroute.

Potential impacts to surface mining operations, if any, would be limited to temporary short-term encumbrances during construction and would be minimized by Entrega working with the owners and/or operators of these mining operations during ROW negotiations and facilities construction to minimize conflicts where mineral resources could be affected. Because construction of the pipeline would be limited to near-surface disturbance, the proposed project would not impact oil and gas production in the area or other underground resource recovery operations, such as coal.

The proposed project would cross private and federal lands in the Red Rim Coal Area between about MPs 167.5 and 169.7. The Red Rim Coal Area has been designated for mining development by the BLM. This area is discussed further in section 3.7.3. Operation of the proposed pipeline and aboveground facilities would not have a significant added impact on current or future mineral recovery operations in the area because most of the proposed pipeline route would follow existing ROWs that have already precluded mineral development along the route. Additionally, impacts on future mineral development would not constitute a significant loss of mineral resource or mineral availability because of the narrow, linear nature of the pipeline ROW relative to the expanse of areas with mineral resource potential.

It is anticipated that the pipeline would be backfilled with materials derived from the trench excavation, and it might be necessary to obtain some construction sand and gravel from local, existing commercial sources for use as backfill, road base, or surface facility pads. These demands for sand and gravel would not substantially affect the long-term availability of construction materials in the area.

3.1.3 Geologic Hazards

Geologic hazards are natural physical conditions that, when active, can result in damage to the land and structures, or injury to people. Geologic hazards that exist in the proposed project area consist of seismic-related hazards (i.e., earthquakes, ground rupture, soil liquefaction), landslide, subsidence, flooding/scour, and avalanche. The conditions necessary for the occurrence of other geologic hazards, such as karst features and volcanism, are not present in the project area. The potential for geologic hazards to affect pipeline facilities is characterized as low to moderate.

Due to the routing of the pipeline and its design, it is unlikely that the pipeline facilities would suffer significant damage from geologic hazards or other naturally occurring events during operation. Further, construction and operation of the project and facilities would not worsen unfavorable geologic conditions in the area.

Seismic Hazards

We reviewed known fault zones that could pose potential geological hazards to the proposed pipeline and aboveground facilities. While the proposed pipeline route would not cross any faults in Colorado that are known to be active or which have a high potential for future surface rupture, the proposed pipeline route would be located near several faults that are considered potentially active (Geologic Survey of Colorado [GSC] 2003b). The Dudley Gulch Graben – South Fault is located near MP -0.5 and the Dudley Gulch Graben - North Fault is located near MP -0.4. The faults that bound the graben have not experienced surface ruptures since at least 11,000 years ago nor were they activated during the most extreme historically recorded earthquake in the area, which occurred in 1882. If reactivation were to occur on the Dudley Gulch Graben boundary faults, the potential exists for landslides and/or mudflows to develop in Dudley Gulch or North Dudley Gulch (Clift 1986).

In general, the potential for seismic events sufficient to damage the proposed pipeline is lower in Wyoming than in Colorado. No active or potentially active surface faults are known to be located along the proposed route in Wyoming (Case et al. 1995a,b, 1998b; Case 1997; King et al. 1987).

Secondary seismic effects (liquefaction, lateral spreading, flow failure) are often more damaging than shaking or surface faulting. Soil liquefaction is a phenomenon that occurs when saturated, cohesionless soils are subjected to strong and prolonged shaking from seismic events. Liquefaction can lead to loss of load bearing strength and can result in lateral spreading, flow failures, and flotation of buried pipelines. Lateral spreading and flow failure involve the horizontal movement of competent surficial soils due to the liquefaction of an underlying deposit. These events can pose a potential hazard to pipeline integrity since they can shift large amounts of material that could bend and weaken a pipeline along slopes. Lateral spreading normally develops on very gentle slopes and involves displacements ranging from 3 to 6 feet, while flow failures generally occur in saturated, loose sands with ground slopes ranging between 10 and 20 degrees.

For soil liquefaction and the related effects of lateral spreading or flow failure to occur, a relatively shallow water table, rapid, strong ground motions, and susceptible soils all must be present. Since the potential for strong earthquake ground-shaking to occur along the proposed pipeline route in Colorado is categorized as low, the potential for soil liquefaction and related effects to develop also is considered to be low.

To protect the pipeline and facilities from seismic activity and its associated hazards, project facilities would be constructed and tested to meet federal standards outlined in 49 CFR Part 192 and geotechnical studies would be conducted so that facilities would be designed and constructed to minimize any effects that shaking or faulting could have on the project facilities.

Landslides

Landslides refer to the downward and outward movement of slope-forming materials reacting under the force of gravity. **Table 3.1-2** identifies areas where the potential for landslides along the proposed pipeline route may exist. No area of high landslide susceptibility was identified for the proposed route, although portions of the route in the Wyoming Basin Province are moderately susceptible to landslides. A potential landslide deposit was identified adjacent to the proposed pipeline route (MPs 236.7 to 236.9, in the Medicine Bow Mountains). For this 0.2-mile section, the risk of further landslides is characterized as moderate. The proposed EPP route is located within an area of low seismic hazard potential, which reduces the potential for landslides to occur.

We consulted with WIC regarding their existing UBL pipeline, since the EPP would parallel the UBL along many segments in western Colorado and southwestern Wyoming. From these consultations, an area was identified along the proposed EPP route at MP 31 where landslides have previously occurred. Construction of the proposed EPP near MP 31 could damage drain tiles previously installed by WIC to mitigate the landslide hazard in the area. As a result, Entrega has committed to repair any construction-related damage that might occur to the drain tile system, thereby ensuring continued protection against landslide recurrence in the area.

Table 3.1-2
Potential Geologic Hazards Along the Proposed Pipeline Route

State/Region	Approximate MP(s)	Potential Geologic Hazard
COLORADO		
Piceance Basin	-0.5 to 39.4	Moderate to low landslide susceptibility and low liquefaction susceptibility.
	-0.5 to 6.3 7.0 to 11.7 12.8 to 14.1 14.7 to 15.5 27.3 to 33.5	Alluvial floodplains and alluvial fans are subject to flooding and scour. Floodplains adjacent to high-angle slopes are especially susceptible to debris flows or land slides.
	-0.5 to -0.4	Low potential for differential movement and surface rupture of the Dudley Gulch Graben boundary faults (North and South).
	13.8	Unnamed normal fault of the Maybell Fault group. Late Cenozoic. No record of recent seismic activity.
	15.3	Unnamed normal fault. Late Cenozoic. No record of recent seismic activity.
	28.0	Unnamed normal fault of the Brown Parks Fault group. No record of recent seismic activity.
Axial Basin	39.4 to 54.5	Moderate to low landslide susceptibility and low liquefaction susceptibility.
	43.0 to 44.3 50.3 to 50.6	Alluvial floodplains and alluvial fans are subject to flooding and scour. Floodplains adjacent to high-angle slopes are especially susceptible to debris flows.
Sand Wash Basin	54.5 to 85.8	Moderate to low landslide susceptibility and low liquefaction susceptibility.
	55.6 to 57.0 59.8 to 60.1 83.9 to 84.8	Alluvial floodplains and alluvial fans are subject to flooding and scour.
	84.7	Unnamed normal fault of the Elkherd Mountain Fault (west) group. No record of recent seismic activity.
	85.6	Same fault as above (Unnamed normal fault of the Elkherd Mountain Fault (west) group). The proposed pipeline route crosses this fault twice. No record of recent seismic activity.
Denver Basin	318.5 to 327.0	Low landslide susceptibility and low liquefaction susceptibility.
	320.2 to 320.7	Alluvial floodplains and alluvial fans are subject to flooding and scour.
WYOMING		
Washakie Basin	85.8 to 133.5	Low landslide susceptibility and low liquefaction susceptibility.
	96.0 to 96.2 98.5 to 98.7 109.8 to 110.0	Alluvial floodplains and alluvial fans are subject to flooding and scour.
Wamsutter Arch	133.5 to 192.8	Low landslide susceptibility and low liquefaction susceptibility.
	134.0 to 134.3 170.9 to 171.1 175.9 to 177.2 188.0 to 188.1 192.7 to 192.8	Alluvial floodplains and alluvial fans are subject to flooding and scour. Internal drainage basins are subject to flash flooding during storm events.
	168.7 172.5	Abandoned underground mines in the area, but none known to be beneath the proposed route. Low potential for underground mine-induced subsidence to impact the project.
Saratoga Valley	192.8 to 214.0	Low landslide susceptibility and low liquefaction susceptibility.
	205.7	Abandoned underground mines in the area, but none known to be beneath the proposed route. Low potential for underground mine-induced subsidence to impact the project.

Table 3.1-2 (Continued)

State/Region	Approximate MP(s)	Potential Geologic Hazard
	212.6 to 212.9	Alluvial floodplains and alluvial fans are subject to flooding and scour.
Medicine Bow Mountains	214.0 to 246.4	Moderate landslide susceptibility and low liquefaction susceptibility.
	225.2 to 225.9 237.3 to 237.6	Alluvial floodplains and alluvial fans are subject to flooding and scour.
	236.7 to 236.9	Route adjacent to a potential landslide deposit along the steep east side of a north-south trending ridge. Moderate landslide susceptibility.
Laramie Basin	246.4 to 284.0	Low landslide susceptibility and low liquefaction susceptibility.
	249.9 to 250.1 274.2 to 274.5	Alluvial floodplains and alluvial fans are subject to flooding and scour.
	256.3 to 259.6	Abandoned underground mines in the area, but none known to lie beneath the proposed route. Low potential for underground mine-induced subsidence to impact the project.
Laramie Mountains	284.0 to 305.0	Low landslide susceptibility.
Denver Basin	305.0 to 318.5	Low landslide susceptibility.

In the event that any previously unknown landslides that would damage the pipeline are identified prior to construction, Entrega has committed to bury the pipeline below the potential landslide depth, if feasible, and/or to implement drainage control to reduce the chance of a landslide. Drainage control could include any of the following methods, either singly or in combination:

- frequent slope breakers;
- frequent ditch breakers;
- subsurface gravel or cobble drains;
- culverts to carry water away from the ROW;
- drainage ditches to carry water to a stream;
- reducing the slopes on cuts; and
- special pipeline padding to reduce drag on the pipeline should the slope move.

Implementation of Entrega's Plan and Procedures (appendices A and B) and the project-specific Blasting Specification Plan (Entrega 2004a) would reduce the potential for construction-related activities to trigger landslides or other slope failures. Additional committed measures for potential ground failure would include the implementation of erosion control measures as described in Entrega's Plan (appendix A). At a minimum, these measures would include the construction of trench breakers, permanent slope breakers, and establishment of permanent vegetation within the ROW.

Subsidence

Subsidence, the loss of surface elevation due to removal of subsurface support, is one of the most diverse forms of ground failure, ranging from small or local collapses to broad regional lowering of the earth's surface. Causes of subsidence can include dissolution in limestone aquifers (karst topography), past and present underground mining, and withdrawal of fluids (groundwater, petroleum, geothermal).

The greatest risk for collapse or subsidence in the project area is from underground mining operations. In Colorado, the most common form of subsidence occurs over abandoned underground coal and clay mines. No areas along the proposed pipeline route in Colorado were identified to have the potential for subsidence resulting from underground mining activities. Further, the proposed project would not cross directly over any known active or abandoned underground mines. We also consulted with WIC to determine if subsidence had been an issue along the existing UBL pipeline. WIC has not experienced problems with mining-induced subsidence along the UBL pipeline.

Similarly, the most common form of subsidence in Wyoming is associated with abandoned underground coal and clay mines. While abandoned underground mines were identified near MPs 168.7, 172.5, 205.7, and 256.3 to 259.6 (Case 1993), Entrega found no evidence of subsidence directly underlying the route. In Wyoming, the proposed EPP route generally follows existing pipelines, which would reduce the likelihood of encountering previously unknown areas of subsidence.

Other types of subsidence are less common in Colorado (Shelton and Prouty 1979) and generally do not pose a significant risk to the proposed pipeline project. No areas of regional subsidence were identified in

the proposed project area. Sites of proposed surface facilities were selected to avoid any known underground mines in the area. Overall, the potential for localized subsidence or collapse features to develop along the project route is low. Nevertheless, WIC did identify two areas of potential concern for sinkholes along their existing UBL pipeline (MPs 25.5 and 53.5 to 54.5). Localized areas of subsidence that materialize as a sinkhole can cause a span area in the pipeline. The length of acceptable span varies depending on the pipe design parameters, but can be easily calculated. The strength and ductility of the pipeline allows it to span over a considerable distance without threatening the integrity of the pipeline. Entrega would monitor the pipeline route for sinkholes during construction and operation. If a span was created that posed a safety hazard, Entrega would be required to mitigate the hazard as required by DOT regulations.

Flooding

In general, seasonal flooding hazards exist where the proposed pipeline route would cross major streams and rivers, and flash flooding hazards exist where the pipeline would cross small watersheds. The proposed pipeline route would constrict 17 perennial and 120 intermittent waterbody crossings in Colorado and 27 perennial and 477 intermittent waterbody crossings in Wyoming, all of which are locations where seasonal or flash flooding could occur. **Table 3.1-2** identifies areas where the proposed pipeline route would cross alluvial floodplains and alluvial fans, which are areas with an elevated risk for flood-related debris flows and scouring to occur. Though flooding in and of itself does not represent a significant risk to buried pipelines, stream scour and mud/debris flows that can accompany flooding can impact pipelines by exposing and leaving unsupported spans of pipe. To minimize these effects, the pipeline would be buried at a sufficient depth to avoid possible scour at waterbody crossings.

We are concerned about the potential for streambed scour on the White, Yampa, Little Snake, and North Platte Rivers, since these rivers can experience very large spring runoff events. Entrega has committed to perform a brief assessment of potential streambed scour depths for seasonal high flows for the North Platte, Yampa, and Little Snake Rivers, and would cross the White and Yampa Rivers by HDD, (placing the pipeline well below scour depth). The assessment would be based on existing stream flow data, USGS topographic maps, and aerial photographs for each crossing. Additional, site-specific information may be obtained, if necessary. **We recommend that Entrega include the White River in its assessment of potential streambed scour depths, so that this information would be available for design purposes if an open-cut crossing is ultimately required at this location.**

Flooding also could damage the project facilities by inundating surface facilities, scouring streambeds at the point of the pipeline crossing, or causing debris flows that could damage surface facilities. With the possible exception of the Meeker Hub Compressor Station (MP 0), the compressor, meter, and pigging stations and mainline valves do not appear to be located within areas susceptible to flooding.

Based on our evaluation of topographical maps, aerial alignment sheets, and station plot plans and consultation with the Rio Blanco County Department of Development (Newmann 2005), it appears that a portion of the Meeker Hub Compressor Station site is located within the 100-year floodplain identified by the Federal Emergency Management Agency. The site also includes about 5 acres of NWI-mapped wetlands.

However, most of the site, including the location of all aboveground facilities, appears to be above the floodplain on an alluvial fan (up to about 5 feet above the floodplain).

Siting aboveground facilities on an alluvial fan exposes them to other potential hazards. An alluvial fan is a fan-shaped geological feature formed by material deposited where a stream issues from a narrow mountain valley onto a plane or broad valley. In this case, the feature is the result of material deposited by flows from the intermittent North Dudley Gulch as it joins the broader Piceance Creek valley. Siting the proposed compressor facilities on the alluvial fan exposes them to an increased potential for flash flooding and debris flows associated with North Dudley Gulch. Although the drainage has been rerouted along the highway frontage (south of the station) and, in most cases, would prevent floodwaters from reaching the site, there remains the potential for flood- and debris flows to reach the site during flashflood events. Therefore, **we recommend that prior to construction, Entrega confirm that the location of all aboveground facilities at the Meeker Hub Compressor Station would be outside of the 100-year floodplain. If any aboveground facility would be located within the 100-year floodplain, Entrega should identify what design measures, site modifications, or other protection measures it would adopt to ensure the safety of the facility from flood and debris flow events.**

Avalanche

Snow avalanches are the rapid down-slope movement of snow, ice, and associated debris, such as rocks and vegetation. While avalanches would not pose a hazard to the underground pipeline facility, an avalanche could damage surface facilities and would pose a risk to workers in the affected area. In the mountainous areas of Colorado and Wyoming, avalanches generally occur above 8,000 feet elevation, and on slopes with average gradients of 30 to 45 degrees. Slopes steeper than 45 degrees usually do not accumulate enough snow to produce large avalanches (Mears 1979).

Overall, the risk of an avalanche damaging the project facilities would be categorized as low because most of the proposed pipeline route would lie below 8,000 feet elevation. Isolated portions of the route in Colorado (MPs 53.3 to 54.0) and Wyoming (MPs 236.4 to 236.9) would traverse or approach elevations and terrain that could favor avalanche development. The currently proposed locations for the compressor and meter stations (un-manned facilities) are not located in avalanche prone areas. The un-manned Arlington Pigging Station (MP 236.9) would be located at the base on the leeward side of a steep slope in one of these designated areas. While snow slides would occur on these slopes, the amount of snow that would accumulate on the slope and the distance from the base of the slope to the pigging facilities suggests that damage to structures would be unlikely.

3.1.4 Paleontological Resources

A paleontological study of existing data was conducted to identify geological units and known fossil localities crossed by the proposed pipeline route. The study identified 33 formal geological formations ranging in age from Precambrian to Pliocene along the proposed pipeline route, many of which are known to contain scattered vertebrate fossil localities and abundant plant and invertebrate fossil sites in the vicinity of the proposed project (Uinta Paleontological Associates, Inc. 2004). The study also identified six informal Quaternary units. The sensitivity of each unit for containing fossil material subsequently was evaluated

using a three-tiered classification system established by the BLM (BLM Paleontology Resources Manual and Handbook H-8270-1). Under this system, units are ranked according to their potential for noteworthy fossil occurrences as follows:

- **Condition 1** – Areas that are known to contain vertebrate fossils or noteworthy occurrences of invertebrate or plant fossils.

- **Condition 2** – Areas with exposures of geological units or settings that have high potential to contain vertebrate fossils or noteworthy occurrences of invertebrate or plant fossils.

- **Condition 3** – Areas that are very unlikely to produce vertebrate fossils or noteworthy occurrences of invertebrate or plant fossils based on their surficial geology, igneous or metamorphic rocks, extremely young alluvium, colluvium, or aeolian deposits, or the presence of deep soils.

Applying these criteria, approximately 167.6 miles of the proposed pipeline route (51 percent) were classified as Condition 1 areas, 70.3 miles as Condition 2 areas (22 percent), 1.7 miles as Condition 1 to 2 areas (less than 1 percent), and 87.9 miles as Condition 3 areas (27 percent) (**table 3.1-3**). In addition, the study identified 87 known fossil localities within 1 mile of the proposed pipeline ROW, including 12 within 500 feet of the centerline.

Entrega conducted a paleontological field survey in the spring and summer of 2004 to identify fossil localities that could be disturbed by pipeline construction. The survey covered a 250- to 300-foot-wide corridor along the length of the fossiliferous strata along the proposed pipeline route, unless the grade was considered too steep, the surface exposures were too well vegetated, or there was substantial alluvial or soil cover. Along segments of the proposed route that parallel an existing pipeline, the edge of the 250- to 300-foot-wide corridor was located 50 feet from the proposed centerline on the side with the existing pipeline and 200 to 250 feet from the centerline on the other side. Where the proposed pipeline would not parallel an existing pipeline, a 300-foot-wide survey corridor centered on the staked centerline of the pipeline route was examined.

The field survey consisted of intensive field reconnaissance of Condition 1 units with exposed bedrock and/or good surface visibility, and spot checking of Condition 2 units with exposed bedrock and/or good surface visibility. Condition 1 and 2 units covered by recent Quaternary deposits or heavy vegetation and Condition 3 units were not examined. Survey coverage included the majority of the proposed pipeline corridor as well as aboveground facilities, extra temporary workspaces, and access roads. No field surveys were conducted from MPs 247.2 and 255.3 due to denied access.

The field survey identified 91 occurrences of fossils in Colorado grouped into 36 localities, and 262 occurrences of fossils in Wyoming grouped into 60 localities. The localities contained the fossil remains of plants, vertebrates, and invertebrates. Construction monitoring at all but four of the localities is recommended. Significant fossil material is contained at these four localities, so excavation or avoidance of these areas is recommended. Entrega is currently evaluating options for avoiding these four localities.

Table 3.1-3
Total Miles of Condition 1, 2, and 3 Areas Along the Entrega Pipeline Route

Formation	Fossil Potential	BLM Rating	Miles Crossed
Alluvium and colluvium (richer near river courses – Laramie and Little Snake Rivers)	Usually low; however, river beds can be rich	Condition 3, but Condition 1 near rivers	48.3
Eolian, wind blown, or loess	Low	Condition 3	0.8
Pleistocene gravels – terrace, glacial, alluvial	Low	Condition 3	2.0
Playa lake and other lacustrine deposits	Low	Condition 3	1.2
Landslide deposits	Depends on rock moved	Condition 3	0.1
Gravel, pediment, and fan deposits	Low	Condition 3	20.2
Upper Miocene Rocks	Locally high	Condition 2	12.3
Ogallala Formation	Locally high	Condition 2	5.3
Miocene Rocks (Browns Park, North Park, Troublesome, or Ogallala formation equivalents)	High	Condition 1	14.0
Browns Park Formation in Colorado and Wyoming	Locally high	Condition 1	9.1
White River Formation	High	Condition 1	3.7
Uinta Formation with Green River Formation tongues in Colorado	High	Condition 1	1.4
Wind River Formation (at base locally includes equivalent of Indian Meadows Formation)	High	Condition 1	2.6
Washakie Formation	High	Condition 1	2.5
Green River Formation in Colorado	High	Condition 1	2.3
Green River Formation: Parachute Member in Colorado	High	Condition 1	1.4
Green River Formation: Laney Member	High	Condition 1	23.3
Green River Formation: Wilkins Peak Member	High	Condition 1	0.1
Green River Formation: Tipton Shale Member	High	Condition 1	5.7
Green River Formation/Luman Tongue	High	Condition 1	0.5
Green River Formation/Lower Wasatch Formation Interface	High	Condition 1	1.6
Wasatch Formation aka DeBeque Formation in Piceance Creek Basin of Colorado	High	Condition 1	16.6
Wasatch Formation: Cathedral Bluffs Tongue	Locally high	Condition 1	33.5

Table 3.1-3 (Continued)

Formation	Fossil Potential	BLM Rating	Miles Crossed
Wasatch Formation: main body in Wyoming	High	Condition 1	13.6
Battle Spring Formation - proximal conglomerate correlative with Wasatch Formation	Moderate	Condition 2	4.0
Hanna Formation	High	Condition 1	10.1
Fort Union Formation in Colorado	Moderate	Condition 2	1.0
Fort Union Formation in Wyoming	High	Condition 1	6.3
Ferris Formation	Locally high	Condition 1	1.9
Lance Formation	Locally high	Condition 1	3.0
Medicine Bow Formation	Moderate	Condition 2	1.9
Lewis Shale in Wyoming	Low for vertebrates	Condition 2	12.8
Lewis Shale in Colorado	Low for vertebrates	Condition 2	0.3
Mesaverde Group	Locally high	Condition 1	10.6
Iles Formation in Colorado	Moderate	Condition 1 to 2	1.7
Williams Fork Formation in Colorado	Locally high	Condition 1	3.8
Mancos Formation in Colorado	Moderate	Condition 2	1.4
Steele Shale	Low for vertebrates	Condition 2	5.5
Steele Shale and Niobrara Formation	Low for vertebrates	Condition 2	14.7
Niobrara Formation	Low for vertebrates	Condition 2	0.6
Morrison Formation (by Laramie)	Usually fossiliferous	Condition 1	<1.0
Chugwater Formation or group by Laramie	Moderate	Condition 2	1.3
Forelle Limestone and Satanka Shale - Goose Egg Formation	Low for vertebrates	Condition 2	2.3
Casper and Fountain Formations	Low for vertebrates	Condition 2	6.9
Metasedimentary and Metavolcanic Rocks	Low	Condition 3	3.6
Sherman Granite	Low	Condition 3	11.7
		Total miles	**327.5**

Source: Uinta Paleontological Associates, Inc. 2004.

Potential impacts to fossil localities during construction could be both direct and indirect. Trenching through significant fossil beds could result in direct damage to or destruction of fossils. Indirect effects during construction could include erosion of fossil beds due to slope regrading and vegetation clearing. Another possible indirect effect could be unauthorized collection of significant fossils by construction workers or the public due to increased access to fossil localities along the ROW.

To manage impacts to fossil localities, Entrega has prepared and would implement a Monitoring and Mitigation Plan to protect fossil resources that may be encountered during project construction, including the resources identified during the field survey (Uinta Paleontological Associates, Inc. 2004). Primary elements of the Monitoring and Mitigation Plan include:

- paleontological monitoring of construction activities across all Condition 1 units (including units examined during the field survey);
- spot checking of construction activities across all Condition 2 units (including units examined during the field survey);
- mitigation procedures for fossil localities identified during construction (e.g., avoidance, excavation, recording of localities);
- provisions for the preparation and curation of fossil collections; and
- provisions for the preparation of a final report based on the recovered data.

All work conducted under the Monitoring and Mitigation Plan would be performed by qualified paleontologists with trained assistants. The plan would be filed with the Secretary prior to construction.

Normal operation of the proposed pipeline and its associated facilities would not disturb important paleontological resources. Maintenance activities would result in surface disturbance, but typically would occur within the trenchline previously disturbed during construction. Since no new disturbances would be anticipated from maintenance activities (i.e., maintenance activities would occur within the EPP ROW), impacts to paleontological resources would be negligible.

3.2 Soils and Noxious Weeds

Soils characteristics that can affect construction or increase the potential for soil impacts include: highly erodible soils; prime farmland; hydric soils; compaction-prone soils; presence of stones and shallow bedrock; droughty soils; depth of topsoil; and percent slope. Additional soil-related issues include revegetation potential, soil salinity, and soil contamination. **Tables 3.2-1** and **3.2-2** summarizes characteristics of soils that would be crossed by the pipeline route.

Table 3.2-1
Acreage Summary of Sensitive Soils

State/ County	Total Acres[1]	Highly Erodible		Prime Farmland[4]	Hydric[5]	Compaction Prone[6]	Stony – Rocky[7]	Shallow Bedrock[8]	Droughty[9]
		Water[2]	Wind[3]						
COLORADO									
Rio Blanco	392	392	12	0	0	0	290	237	31
Moffat	864	803	265	0	26	0	145	69	421
WYOMING									
Sweetwater	1,122	752	129	0	<1	0	466	132	445
Carbon	1,167	1,065	80	0	0	0	454	233	458
Albany	701	518	8	0	43	10	308	222	120
Laramie	268	264	0	0	4	0	191	192	4
COLORADO									
Larimer	3	3	0	0	0	0	2	2	0
Weld	136	98	2	0	0	0	20	29	34
Project Total Acres[10,11]	**4,653**	**3,895**	**496**	**0**	**73**	**10**	**1,876**	**1,116**	**1,513**

1 Acreage assumes a 100-foot-wide construction ROW, including areas where ROW was increased/decreased due to site-specific conditions, and additional temporary workspace. Individual soils may occur in more than one characteristic class.
2 Includes land in capability subclasses 4E through 8E and soils with slopes greater than or equal to 9 percent.
3 Includes soils in wind erodibility groups 1 and 2.
4 Includes land listed by the NRCS (1995) as potential prime farmland if adequate protection from flooding and adequate drainage are provided.
5 As designated by the NRCS (1995).
6 Includes soils that have clay loam or finer textures in somewhat poor, poor, and very poor drainage classes.
7 Includes soils that have either: 1) a cobbly, stony, bouldery, gravelly, or shaly modifier to the textural class, or 2) have >5 percent (weight basis) of stones larger than 3 inches in the surface layer.
8 Includes soils that have bedrock within 60 inches of the soil surface.
9 Includes coarse-textured soils (sandy loams and coarser) that are moderately well to excessively drained.
10 Discrepencies in acreages are due to rounding.
11 Total does not include 61 acres in Colorado and 350 acres in Wyoming of land to be used for pipe storage and contractor yards, as no soil data was available.

Pipeline construction activities that have the potential to adversely affect soils and revegetation potential include: clearing and grading along the ROW, trenching, backfilling, and restoration. Potential soil impacts include: loss of soil due to water or wind erosion, especially on steep slopes or fine sandy soils; reduction of

Table 3.2-2
Acreage Breakdown of Topsoil Depth and Average Slope Class Along the Entrega Pipeline Route

State/ County	Total Acres[1]	Topsoil Depth[2] (inches)					Slope Class[3] (percent)				
		0 - 6	>6 - 12	>12 - 18	>18 - 24	>24	0-5	>5-8	>8-15	>15-30	>30
		Acres									
COLORADO											
Rio Blanco	392	223	149	0	0	20	18	43	122	48	161
Moffat	864	532	304	0	16	12	118	243	271	133	99
WYOMING											
Sweetwater	1,122	630	393	55	0	44	745	11	169	165	32
Carbon	1,167	823	327	0	0	19	401	223	268	250	25
Albany	701	453	108	72	20	48	335	44	117	108	97
Laramie	268	95	116	21	4	31	50	37	53	103	25
COLORADO											
Larimer	3.0	1	1	0	0	<1	1	<1	<1	1	0
Weld	136.0	35	94	3	1	3	56	46	25	10	0
Project Total Acres[4,5]	**4,653**	**2,792**	**1,492**	**151**	**41**	**177**	**1,724**	**647**	**1,025**	**818**	**439**

[1] Acreage assumes a 100-foot-wide construction ROW, including areas where ROW width was increased/decreased due to site-specific conditions and additional temporary workspace areas.
[2] Topsoil includes A-horizons (layers 1, 11, and 12) listed in the STATSGO layer table.
[3] Slopes are grouped by the averages of the high and low slope ranges provided in the STATSGO database for each MUID component soil series. For example, Tresano series, 3 to 10 percent slopes, is 20 percent of MUID CO010. Its average slope is 6.5 percent. The representative acreage, calculated by multiplying percent composition by the total MUID acreage, is included in the >5 to 8 percent slope class.
[4] Discrepencies are due to rounding.
[5] Total does not include 61 acres in Colorado and 350 acres in Wyoming of land to be used for pipe storage and contractor yards, as no soil data were available.

soil quality by mixing topsoil with subsoil or by bringing excess rocks to the surface; soil compaction due to traffic by heavy equipment; introduction of noxious weeds or invasive plant species; and disruption of surface and subsurface drainage or irrigation systems.

None of the soils that would be crossed by the proposed pipeline route or the aboveground facilities are considered prime farmland or potentially prime farmland (**table 3.2-1**). Therefore, no impacts on highly productive agricultural soils are anticipated.

Construction of the compressor, meter, and pigging stations would affect about 65 acres. The Meeker Hub Compressor Station would be located on land already dedicated to commercial/industrial uses, while the Bighole and Wamsutter Compressor Stations, Cheyenne Hub Metering Station, and the Arlington Pigging

Station would be built on rangeland. Soils in these areas are susceptible to wind and water erosion. At the Meeker Hub Compressor Station, soils on a portion of the site are hydric and prone to compaction.

Seventeen of the 22 mainline valves would be constructed in the 50-foot-wide permanently maintained ROW. The remaining five mainline valves would be located within compressor and meter stations. Each mainline valve that was located within the ROW would occupy an area of 40 feet by 60 feet. Soil constraints for these mainline valves would be the same as those identified for the surrounding pipeline ROW.

Ancillary facilities would consist of 3 contractor and 6 pipe storage yards occupying about 411 acres of land. A number of the pipe storage yards would be located in areas already used for industrial purposes, however, some sites would be located partially or entirely in rangeland. Generally, yard preparation would be limited to grading and leveling, and possibly importing some fill. Where the yards would be located in rangeland, topsoil would be stripped and stored at the edge of the yard and temporary traffic lanes would be installed by placing gravel over geotextile fabric. Impacts would be similar to those of pipeline construction (i.e., reduction of soil quality by topsoil loss or mixing with subsoils, compaction, and introduction of invasive or noxious weeds). Upon completion of the project, the traffic lanes would be removed, compacted soils would be mitigated according to Entrega's Plan (appendix A), and topsoil would be restored to its original position.

Soil impacts at the compressor and meter station sites would be mitigated by the implementation of Entrega's Plan, such as erosion control measures, topsoil separation and handling procedures, and remediation of compacted soils. Installation of the mainline valves would occur within the 100-foot-wide temporary construction ROW or the proposed compressor or meter station sites, so no additional land would be disturbed during construction.

While normal operations would have negligible effects to soil resources, future routine maintenance activities could result in infrequent, isolated surface disturbances along the pipeline ROW. These future maintenance activities would adhere to construction and reclamation standards within Entrega's Plan, Procedures, and POD. Adherence to these plans would minimize impacts associated with future maintenance activities.

3.2.1 Erosion

The majority of the proposed route would cross range and shrublands on gently rolling to moderately steep slopes that are highly erodible. Of the total 4,653 acres (not including pipe storage and contractor yards) potentially affected by pipeline construction, the majority (3,895 acres, 84 percent) are considered highly water erodible. About 11 percent (496 acres) of soils along the proposed pipeline route are highly wind erodible, although there is considerable overlap between wind and water erosion classes in some counties (**table 3.2-1**). Removal of vegetation and topsoil increases the likelihood of erosion by wind or water. About 37 percent (1,724 acres) of the soils along the route have average slope-ranges in the 0 to 5 percent category (see **table 3.2-2**). Fifty-four percent of the remaining soils range from greater than 5 percent to 30 percent slope (2,490 acres). About 9 percent of soils have slopes greater than 30 percent (439 acres) (**table 3.2-2**). Most of the highly erodible soils (water and wind erosion) are in western Colorado and Wyoming (1,472 acres and 2,816 acres, respectively); while most of the soils in eastern Colorado are

primarily susceptible to water erosion (**table 3.2-1**). Entrega would control erosion and sedimentation by a variety of different methods as discussed in Entrega's Plan, Procedures, and POD. During construction in areas prone to wind erosion, **we recommend that Entrega "wet down" topsoil stockpiles to maintain a surface crust which would act to minimize wind-blown losses.** Topsoil losses reduce soil productivity, which results in further erosion.

In areas susceptible to erosion, it is anticipated that the soil covering the pipeline could be eroded away and could potentially expose the pipeline over time. While the DOT requires that a pipeline be buried to a specified depth during construction (30 inches in most locations), there are no regulations dictating that the depth of cover be maintained during the life of the pipeline. Therefore, **we recommend that if severe wind erosion occurs (as noted by exposed pipe, deflation, or dune formation), Entrega should install and monitor erosion prevention devices (e.g., snow fences) to ensure soil stabilization as part of Entrega's ongoing maintenance program.**

3.2.2 Sensitive Soils

During construction across BLM and state-owned lands, and subject to the approval of the land managing agency, Entrega proposes to strip and segregate topsoil from the ditch line only, except in cut areas where the ROW or additional temporary workspace areas must be leveled for safe construction. In such areas, Entrega would strip the full ROW. The stripped topsoil would be stored separately and not allowed to mix with trench spoil. On private lands, Entrega would segregate topsoil according to landowner requests. If the landowner has not made a specific request regarding topsoil segregation, Entrega would use the same methods as described above for BLM and state-managed lands.

We generally agree that limiting the amount of stripping in shallow topsoil areas reduces impacts on topsoil by limiting its disturbance and how much it is handled. Less disturbance generally equates to improved reclamation success and less opportunity for the introduction of invasive species; less handling results in less topsoil loss, which is especially important when topsoil is shallow. However, by not stripping topsoil from the working side of the construction ROW, there is the potential for heavy construction equipment to pulverize the topsoil and intermix it with subsoil as the equipment and vehicles move up and down the ROW. In windy areas, pulverized topsoil would be blown off the ROW and effectively lost. As a result, **we recommend that Entrega's EIs monitor for potential topsoil degradation in areas where it is not stripped from the working side of the construction ROW. If topsoil in these areas becomes powdered or pulverized to a depth of 4 inches and is being mixed with subsoil, or if wind is moving topsoil off the ROW regardless of dust control measures applied, then the EIs, in conjunction with the agencies' compliance monitors, would require that Entrega change its procedures to strip topsoil from both the ditch line and the working side of the ROW.** As required by Entrega's Plan, topsoil stockpiles would be segregated from trench spoil. Entrega would continue with this expanded topsoil stripping procedure until construction encountered an area with soils having a more coarse texture and greater cohesiveness. Here, limited topsoil stripping of the ditch line only could be resumed if approved by both the EIs and agencies' compliance monitors.

About 10 acres (less than 1 percent of total area) of compaction-prone soils were identified (**table 3.2-1**) and all of these areas are located in Albany County, Wyoming. In these susceptible areas, Entrega would

minimize compaction by restricting activities during wet soil conditions. Entrega would alleviate soil compaction and rutting in agricultural and rangeland soils, as specified in Entrega's Plan, Procedures, and POD.

About 25 percent of the pipeline route contains soils with substantial rocks and stones in the surface soil horizons, with the majority of rocky soils occurring in Rio Blanco County, Colorado, and the four counties in Wyoming (**table 3.2-1**). Soils containing shallow bedrock occupy about 24 percent (1,116 acres) of the proposed pipeline route. About 12 percent of the total acreage of shallow bedrock is designated as hard rock that could require blasting. The remaining areas of shallow bedrock are soft enough to be ripped with backhoes or bulldozers equipped with rippers. The majority of shallow bedrock areas are located in Rio Blanco County, Colorado and Sweetwater, Carbon, and Albany Counties, Wyoming (**table 3.2-1**).

During construction, Entrega would minimize the introduction of subsoil rock into topsoil (Entrega 2004b,c), ensuring that the amount of rock on the ROW after construction would be similar to or less than the area adjacent to the ROW. Where necessary, excess rock would be either hauled off the ROW or disposed of on the ROW, if approved by the landowner or land management agency and as allowed by applicable permit conditions.

About 33 percent (1,513 acres) of soils along the proposed pipeline route are inherently droughty (**table 3.2-1**). To mitigate the adverse effects of pipeline construction on droughty soils that are not under cultivation and to assist with revegetation efforts, Entrega would apply mulch and stabilize the soil surface to minimize wind erosion and to conserve soil moisture (Entrega 2004b,c).

The proposed pipeline route would cross about 73 acres of hydric soils, an indicator of areas that may contain drain tiles for crop production. Entrega has committed to replace or repair any drain tiles damaged by construction activities. Entrega has prepared an Irrigation System Repair and Monitoring Plan (appendix H). In this plan, Entrega has agreed to maintain water flow to irrigation systems throughout construction unless landowner permission is obtained to temporarily interrupt water flow. If damage to irrigation systems occurred during construction, Entrega has agreed to restore or repair the damage.

In parts of Moffat County, Colorado, and Sweetwater, Carbon, and Albany Counties, Wyoming, the proposed pipeline route would cross a variety of soils affected by salinity and sodicity. These soils exhibit a characteristic pattern of localized bare spots and scattered, salt-tolerant vegetation and often lack recognizable topsoil. Although saline and sodic soils do not comprise a large acreage of soils along the pipeline route (about 2 percent [over 6 miles] of the entire pipeline route), construction disturbances in areas containing these soils would be difficult to revegetate and could require additional efforts to achieve adequate restoration. Entrega would consult with NRCS and BLM personnel, or other soils specialists, as appropriate, to develop additional restoration measures for these soils.

3.2.3 Soil Contamination

Soil contamination along the route could result from at least two sources: material spills during construction and trench excavation through pre-existing contaminated areas. Contamination from spills or leaks of fuels, lubricants, coolants, and solvents from construction equipment could impact soils. These impacts would

typically be minor because of the low frequency and volumes of these occurrences. Furthermore, Entrega has developed a SPCC Plan that specifies cleanup procedures in the event of soil contamination from spills or leaks of fuels, lubricants, coolants, or solvents. Entrega would be required to clean up spills in accordance with its SPCC Plan (Entrega 2004d). There are currently no known contaminated sites crossed by the proposed pipeline route or affected by aboveground and ancillary facilities. If contaminated or suspect soils (e.g., hydrocarbon contamination) were identified during trenching operations, work in the area of the suspected contamination would be halted until the type and extent of the contamination was determined. The type and extent of contamination, the responsible party, and local, state, and federal regulations would determine the appropriate cleanup method(s) for these areas.

There are no known National Priority List sites, Comprehensive Environmental Response, Compensation, and Liability Information System sites, or state landfills within 1 mile of the proposed pipeline route (EPA 2003a,b). Review of the NRCS identified six reported spills within 1 mile of the proposed pipeline route (EPA 2004a). Based on review of the public reports on these spill sites, it is unlikely any contaminated soils would be encountered during construction due to their location in relation to the proposed pipeline route. Based on the data contained in the spill reports, the spills are located down gradient from the pipeline route and have been contained and cleaned up (EPA 2004a).

3.2.4 Noxious Weeds and Other Invasive Plants

After disturbances to the soil, vegetation communities can be susceptible to infestations of invasive or exotic weed species. Vegetation removal and soil disturbance during construction could create optimal conditions for the establishment of invasive, non-native species. Construction equipment traveling from weed-infested areas into weed-free areas could disperse invasive noxious weed seeds and propagates, resulting in the establishment of noxious weeds in previously weed-free areas.

The prevention of the spread of noxious weeds is a high priority to nearby communities. We received 12 comments related to noxious weeds during the public scoping period for this project. Under Executive Order (EO) 13112, federal agencies shall not authorize, fund, or carry out actions likely to cause or promote the introduction or spread of invasive species in the U.S. or elsewhere unless it has been determined that the benefits of such actions outweigh the potential harm caused by invasive species and that all feasible and prudent measures to minimize the risk of harm will be taken in conjunction with the actions.

The BLM maintains a list of invasive species, some of which may potentially occur within the proposed project area in Colorado and Wyoming (**table 3.2-3**). These are species that the BLM attempts to manage in western states. The states of Colorado and Wyoming also maintain similar, but not identical, lists of designated noxious weed species.

The Wyoming Weed Program is a programmatic plan, similar to the BLM Weed Management Plan. In comparison, the Colorado Weed Program is more prescriptive. In Colorado, noxious weeds are classified as List A, B, or C under the Colorado Noxious Weed Act (§ 35 5.5-101 through 119, C.R.S. [2003]). Each list has specific control requirements, with the most stringent requirements for those species found on List A, including yellow starthistle and Dyer's woad. If these species were found along Entrega's ROW or at aboveground facilities in Colorado, Entrega would be required to follow the prescribed management

Table 3.2-3
Noxious Weeds Potentially Occurring Along the Proposed Pipeline Route

Common Name	Scientific Name	Colorado Noxious Weed List	BLM Little Snake Field Office	BLM White River Field Office	BLM Rawlins Field Office	Rio Blanco County, CO	Moffat County, CO	Larimer County, CO	Weld County, CO	Sweetwater County, WY	Carbon County, WY	Albany County, WY	Laramie County, WY
Camelthorn	*Alhagi pseudalhagi*	A											
Common Burdock	*Arctium minus*	C			X	X				X			
Cheatgrass	*Bromus tectorum*	C	X										
Plumeless Thistle	*Carduus acanthoides*	B				X							
Whitetop / Hoary Cress	*Cardaria draba*	B	X		X	X				X	X	X	
Musk Thistle / Biannual Thistle	*Carduus nutans*	B	X	X	X	X			X	X	X	X	
Spotted Knapweed	*Centaurea maculosa*	B		X	X	X				X	X	X	
Diffuse Knapweed	*Centaurea diffusa*	B			X	X			X	X			
Meadow Knapweed	*Centaurea pratensis*	A											
Russian Knapweed	*Centaurea repens*	B			X	X			X	X	X		
Yellow Starthistle	*Centaurea solstitialis*	A				X							
Squarrose knapweed	*Centaurea virgata*	A											
Rush Skeletonweed	*Chondrilla juncea*	A											
Canada Thistle	*Cirsium arvense*	B		X	X	X			X	X	X	X	X
Bull Thistle	*Cirsium vulgare*	B		X									
Field Bindweed	*Convolvulus arvensis*	C			X	X			X	X			X
Common Crupina	*Crupina vulgaris*	A											
Houndstongue	*Cynoglossum officinale*	B	X	X	X	X				X	X	X	
Plains Larkspur	*Delphinium geyeri*	--									X		
Cypress spurge	*Euphorbia cyparissias*	A											
Leafy Spurge	*Euphorbia esula*	B	X		X	X			X	X	X		X
Myrtle Spurge	*Euphorbia myrsinites*	A											
Curly Cup / Gum Weed	*Grindelia squarrosa*	--				X							
Halogeton	*Halogeton glomeratus*	C	X		X	X					X		
Foxtail Barley	*Hordeum jubatum*	--								X			
Hydrilla	*Hydrilla verticallata*	A											
Black Henbane	*Hyoscyamus niger*	B		X	X	X				X	X	X	
Dyer's Woad	*Isatis tinctoria*	A			X					X			
Kochia / Fireweed / Summer Cypress	*Kochia scoparia*	--				X							
Sericea Lespedeza	*Lespedeza cuneata*	A											
Perennial Pepperweed / Tall Whitetop	*Lepidium latifolium*	B	X	X	X	X	X			X		X	
Dalmation Toadflax	*Linaria dalmatica*	B	X		X	X		X	X	X		X	X
Yellow Toadflax	*Linaria vulgaris*	B				X		X					

Table 3.2-3 (Continued)

Common Name	Scientific Name	Colorado Noxious Weed List	BLM Little Snake Field Office	BLM White River Field Office	BLM Rawlins Field Office	Rio Blanco County, CO	Moffat County, CO	Larimer County, CO	Weld County, CO	Sweetwater County, WY	Carbon County, WY	Albany County, WY	Laramie County, WY
Wyeth Lupine	*Lupinus wyethii*	--									X		
Purple Loosestrife	*Lythrum salicaria*	A											
Scotch Thistle	*Onopordum acanthium*	B				X			X				
Plains Pricklypear	*Opuntia polyacantha*	--									X		
African Rue	*Penganum harmala*	A											
Sulfur Cinquefoil	*Potentilla recta*	C				X							
Russian Thistle / Tumbleweed	*Salsola tragus*	--				X							
Mediterranean Sage	*Salvia aethiopis*	A											
Giant Salvinia	*Salvinia molesta*	A											
Tansy Ragwort	*Senecio jacobaea*	A											
Medusahead	*Taeniatherium caput-medusae*	A											
Salt Cedar / Tamarisk	*Tamarix* spp.	B	X		X					X			
Common Mullein	*Verbascum thapsus*	C		X		X				X			

techniques stipulated by Colorado's Noxious Weed Act. For species in List A, these techniques must be applied for the duration of the seed longevity for the particular species, which is at least 8 years for Dyer's woad and at least 10 years for yellow starthistle. Control requirements for species on Lists B and C are less stringent.

To control the spread of noxious weeds, Entrega has prepared a Weed Management Plan (appendix D) incorporating details regarding known occurrences of noxious and invasive weeds along the proposed project, current treatment of known noxious weed areas, and mitigation measures that Entrega would implement to minimize the spread and establishment of noxious weeds and non-native invasive species. Entrega would require that its contractors adhere to the mitigation measures outlined in its Weed Management Plan. Mitigation measures found in the Weed Management Plan include:

- Prior to construction, Entrega would complete surveys of the areas of known and anticipated infestations of noxious weeds to identify locations of infestations or presence of noxious weed species identified by federal, state, and local agencies.

- Based on survey results and agency consultations, pretreatment of noxious weed infestations may be conducted in selected areas. Depending on the species and the time of construction, treatment methods could include chemical or mechanical methods to remove invasive weed populations from the construction ROW prior to surface disturbance.

- Prior to mobilizing to the project area, all contractor vehicles and equipment would be required to be cleaned of soil and debris that is capable of transporting noxious weed propagules. All contractor vehicles and equipment would be inspected by the EI(s) and may require additional cleaning.

- Prior to entering each county or moving from an area known to contain noxious or invasive weeds, Entrega would clean all contractor vehicles and equipment of soil and debris capable of transporting weed propagules.

- The contractor would ensure that certified weed-free straw or hay bales used to construct sediment control devices or used as mulch applications are obtained from approved certified sources, as recommended by the County Weed and Pest Districts, Weed Control Supervisors, and the states of Colorado and Wyoming.

- An equipment wash station would be installed at the Yampa River crossing (MP 50.5).

- Segregated topsoil in areas identified supporting noxious weeds would not be moved outside the boundaries of that area or transported for use to other locations on the project.

During scoping, we received several comments expressing concern about loss of vegetation productivity. However, the most common concern expressed was the potential for the introduction and spread of noxious and invasive weeds. Many of the concerns and suggestions are addressed by elements of Entrega's Plan

(such as topsoil segregation and NRCS recommendations for seeding and weed control) and by Entrega's Weed Management Plan. This plan presents information provided by various county weed departments and BLM offices, identifying where noxious or invasive weed species are present along portions of the proposed route. Nevertheless, Entrega has not yet surveyed its entire route to document and map existing weed infestations. Therefore, **we recommend that Entrega revise its Weed Management Plan to include:**

a. **the results of a survey which identifies by MP where noxious or invasive weeds are currently present either within or immediately adjacent to all areas of project-related disturbance; and**

b. **a site-specific plan for each location where weeds are present which:**

   i. **describes options for pretreatment (including the month(s) of the year when pretreatment would be effective);**

   ii. **identifies who was consulted regarding possible pretreatment options; and**

   iii. **includes whether the landowner/administrator has approved of the pretreatment.**

During construction, Entrega proposes to site vehicle and equipment wash stations at various locations such as the Yampa River crossing, prior to entering each county, and where equipment would be moved from an area that is known to contain noxious or invasive weeds. However, information regarding the specific locations and number of wash stations, as well as how these stations would be operated and restored, has not been included in the Weed Management Plan. Therefore, **we recommend that Entrega's Weed Management Plan identify the location of all equipment wash stations (by MP), the source(s) of the wash water, how effluent from the wash stations would be monitored/treated to prevent seed releases, and specific plans for station decommissioning. Entrega also should include a scaled plot plan of a typical wash station in the Weed Management Plan, identifying all features. Wash stations should be at least 0.25 mile from all perennial streams and monitored for weeds after construction as part of the ROW monitoring and reclamation efforts.**

Despite efforts to prevent the spread of noxious weeds, it is possible that pipeline operation and maintenance activities (e.g., ground surveillance, routine checks of mainline valves) would increase the prevalence of noxious weeds along the ROW or that weeds would be transported into areas that were relatively weed-free. To reduce the spread of invasive and noxious weeds following construction activities, **we recommend that Entrega control noxious weeds along the pipeline ROW for the life of the project. Measures for long-term weed control strategies should be developed by consultations with the local NRCS, weed control board or officials, land management agencies, and landowners. Entrega's developed methods and comments from the various agencies should be filed with the Secretary for the review and written approval of the Director of the Office of Energy Projects (Director of OEP) before implementation.**

Finally, to provide landowners with a specific avenue for resolving construction and ROW restoration issues, **we recommend that Entrega develop and implement an environmental complaint resolution procedure that remains active for at least 3 years following the completion of construction. The**

procedure should provide landowners with clear and simple directions for identifying and resolving their environmental mitigation problems/concerns during construction of the project and restoration of the ROW. Prior to construction, Entrega should mail the complaint resolution procedure to each landowner whose property would be crossed by the project.

a. In its letter to affected landowners, Entrega should:

   i. provide a local contact and telephone number that the landowners should call first with their concerns; the letter should indicate how soon a landowner should expect a response;

   ii. instruct the landowner that, if they are not satisfied with the response, they should call Entrega's Hotline; the letter should indicate how soon to expect a response; and

   iii. instruct the landowners that if they were still not satisfied with the response from Entrega's Hotline, they should contact the Commission's Enforcement Hotline at (888) 889-8030 or at hotline@ferc.gov.

b. In addition, Entrega should include a table in its status report containing the following information for each problem/concern:

   i. the identity of the caller and the date of the call;

   ii. the identification number from the certificated alignment sheet(s) of the affected property and approximate location by MP;

   iii. a description of the concern/problem; and

   iv. an explanation of how and when the problem was resolved, will be resolved, or why it has not been resolved.

3.3 Water Resources

3.3.1 Groundwater

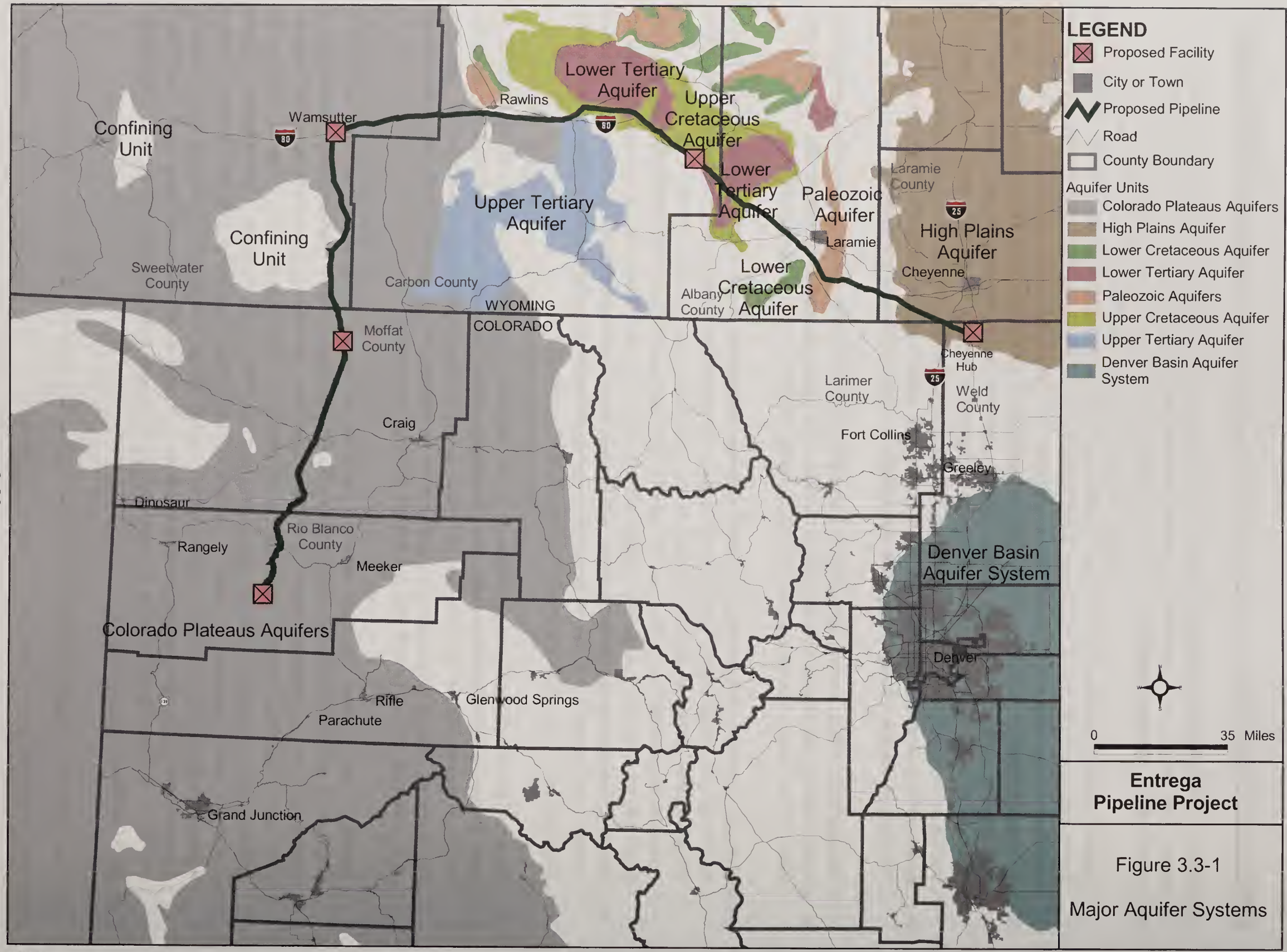
Aquifers within the proposed project area include unconsolidated deposits of gravel, sand, silt, and clay, and consolidated bedrock formations. **Figure 3.3-1** illustrates the locations of major aquifer systems that would underlie the proposed project. Some of these aquifers overlap each other at varying depths. Thin alluvial aquifers immediately underlie the proposed project area, but groundwater is typically withdrawn from deeper aquifers. The major near-surface aquifer systems underlying the proposed pipeline route include the Colorado Plateaus aquifer system (including the Uinta-Animas Aquifer in Rio Blanco and Moffat Counties) and the High Plains Aquifer in Larimer, Weld, and Laramie Counties. In the Uinta-Animas Aquifer, depth to water typically ranges from 0 to 500 feet and water tends to be of good quality. Groundwater in the High Plains Aquifer is typically found from 50 to 300 feet and is generally of excellent quality.

Entrega has identified 2 potential springs located within 150 feet of the proposed project. These springs are located at MPs 56.0 and 203.5. Entrega is currently verifying the presence of these springs or seeps, and would file the results with the Secretary prior to construction.

Many public and private water supply wells in Colorado and Wyoming are in alluvial valleys (lowlands next to streams and rivers). These types of supply wells occur along the majority of the proposed pipeline route. These shallow wells can be very productive and yield high quality water; however, they are the most vulnerable to pollution from surface activities. The depth to groundwater in many shallow wells is directly influenced by water levels in nearby streams and can fluctuate several feet in response to seasonal stream changes. Entrega has identified 11 private water supply wells that may be within 150 feet of the proposed pipeline route (**table 3.3-1**). No known public water supply wells or wellhead protection areas are located within 400 feet of the pipeline centerline (Parker 2004; Parachini 2004).

Because permanent aboveground facilities would be located either on or adjacent to the construction ROW, groundwater resources in the vicinity of the aboveground facilities would be similar to those along the proposed pipeline route. Entrega has no plans to use groundwater during construction or operation, consequently, impacts to groundwater quantity would be limited to those caused by the physical disturbance of the overlying soils and runoff during grading, trenching, and blasting.

Impacts to groundwater resources would be minimized or avoided by the use of standard construction practices as outlined in Entrega's Plan and Procedures. Ground disturbance associated with typical pipeline construction primarily would be limited to 10 feet or less below the existing ground surface, which is above most surficial aquifers and wells that might be completed in a shallow aquifer. Nevertheless, construction activities such as trenching, blasting, dewatering, and backfilling could encounter shallow alluvial aquifers and cause minor fluctuations in shallow groundwater levels and/or increased turbidity within the aquifer adjacent to the activity. Impacts to deeper aquifers would not be anticipated. Since most shallow alluvial aquifers exhibit rapid recharge and groundwater movement, shallow aquifers would likely quickly reestablish equilibrium if disturbed and turbidity levels would rapidly subside. Consequently, the effects of construction would be short term.



Entrega Pipeline Project

Figure 3.3-1

Major Aquifer Systems

Table 3.3-1
Private Water Supply Wells Identified Within 150 Feet of the Entrega Pipeline Project[1]

State / Approximate MP	County	Direction from Construction Workspace
COLORADO		
-0.5	Rio Blanco	Northwest
4.7	Rio Blanco	East
7.1	Rio Blanco	North
15.6	Rio Blanco	West
WYOMING		
160.8	Sweetwater	North
178.6	Carbon	South
236.8	Carbon	North
236.9	Carbon	South
262.5	Albany	Southwest
302.8	Laramie	North
309.8	Laramie	Southwest

[1] Based on a search of Wyoming Well Permit Spatial Data (University of Wyoming 2003); USGS well information (USGS 1995, 1996); USGS topographic maps (USGS 2004); and the Colorado Division of Water Resources well information (CDWR 2001).

Blasting would likely be required along segments of the proposed pipeline route where bedrock is located at or near the ground surface (**table 3.2-1**). Blasting operations have the potential to damage nearby structures including wells, buildings, and underground pipelines. To minimize potential impacts, Entrega has developed a Blasting Specification Plan that identifies blasting procedures including safety, use, storage, and transportation of explosives (Entrega 2004a). Briefly, the Blasting Specification Plan requires that:

- all blasting be performed by registered licensed blasters who would be required to secure all necessary permits and comply with regulatory requirements in connection with the transportation, storage, and use of explosives, and blast vibration limits;

- appropriate flags, barricades, and warning signals be used to ensure safety during blasting operations. Blast mats would be used when needed to prevent damage and injury from fly rock; and

- blasting in the vicinity of existing pipelines would be coordinated with the other pipeline operator(s), and would follow operator-specific procedures, as necessary.

After blasting, if affected landowners identified damage or if excessive peak particle velocities were recorded during the blasting operations, Entrega has agreed to conduct a post-blast survey of nearby structures, wells, and utilities to verify property damage. Entrega also has committed to either repair or fairly compensate the owner for damages that result from blasting.

Additionally, Entrega is considering conducting pre-blast surveys of structures or water wells within 200 feet of construction in blast areas and monitoring ground vibration at structures and wells within this range. We

believe that these measures would be worthwhile. This also would be consistent with the approach for protecting private water supply wells that Entrega has taken in its SPCC Plan (see discussion below). Therefore, **we recommend that Entrega should**:

- **prior to construction, file with the Secretary the location by MP of all water supply wells or water supply systems within 200 feet of all construction work areas. For each, the filing should identify the type of well (domestic, municipal, industrial, agricultural, etc.);**

- **prior to any blasting activities, obtain landowner permission to use an independent contractor to inspect any aboveground structures and water supply wells within 200 feet of construction areas subject to blasting;**

- **during blasting activities, monitor ground vibrations at the nearest structure or water supply well within 200 feet of construction areas subject to blasting;**

- **if water supply wells/systems are damaged during construction, provide an alternative source of potable water until the well or system is repaired/replaced or the landowner is fairly compensated for the damage; and**

- **file a report with the Secretary within 30 days of placing the pipeline facilities in service identifying all water supply wells/systems damaged by construction, and how they were repaired, including a discussion of any complaints concerning the well yield or water quality and how each problem was resolved.**

While there are currently no designated sole source aquifers in Colorado (EPA 2004b), the EPA has designated the Elk Mountain Aquifer as a sole source aquifer in Wyoming. Based on the designated boundary map, the Elk Mountain Aquifer is located approximately 2,500 feet south of the proposed pipeline route at its nearest location at about MP 234.0 (EPA 2004d). In addition to the Elk Mountain Aquifer, the City of Laramie and the County of Albany have designated an aquifer protection overlay zone, known as the Casper Aquifer Protection Area, to safeguard wells and springs located east of Laramie, Wyoming. The pipeline alignment passes within approximately 1 mile of the southwest edge of the Casper Aquifer Protection Area near MP 280. Based on the project's distance from these designated aquifers and implementation of Entrega's SPCC Plan, we believe that construction and operation of the proposed project would have no significant impact on protected or sole source aquifers.

A potential hazard of long-term groundwater contamination exists from vehicle refueling and maintenance, from hazardous material spills that occur during construction, or from the disturbance of contaminated soils. Spills or leaks of fuels or other hazardous liquids may affect groundwater quality, and dispersal of pollutants from affected soils could be a continuing source of aquifer contamination. The deterioration of groundwater quality by such factors could adversely affect groundwater uses. These impacts could be avoided or minimized by restricting the locations of parking, refueling and storage areas and by implementing procedures to prevent and respond to spills or leaks of hazardous materials.

In the event that contaminated soil and/or groundwater contamination was encountered during construction, Entrega would notify the affected landowner and coordinate with the appropriate federal and state agencies as mandated by notification requirements. Entrega's Procedures set forth measures that restrict locations for overnight parking and fueling of equipment, hazardous materials storage, and concrete coating activities. Additional procedures address preparedness for rapid containment and prompt and effective cleanup of spills. In addition, because of potential contamination impacts to both groundwater and surface water resources, Entrega has developed an SPCC Plan (Entrega 2004d). In summary, the SPCC Plan:

- identifies preventative measures to avoid hazardous material spills or leaks;
- regulates locations for refueling, lubricating, and equipment washing activities;
- provides for vehicle and equipment inspection and maintenance;
- defines proper storage and handling of fuels, lubricants, and hazardous materials;
- identifies immediate spill response procedures for uplands, wetlands, or waterbodies; and
- establishes reporting and notification protocols.

A major feature of Entrega's SPCC Plan is that refueling and lubricating of construction equipment would be restricted to upland areas at least 100 feet from the edge of any streams, wetlands, ditches, and other waterbodies on private lands, 200 feet from private water supply wells, and 400 feet from public water supply wells. Storage sites for fuels, other petroleum products, chemicals, and hazardous materials (including wastes) would be located in upland areas. No hazardous substances would be stored within 100 feet of streams and/or 200 feet of private water supply wells (or 400 feet of public water supply wells). Entrega would confirm the locations of areas where such activities are prohibited with the EI prior to site entry with construction equipment. If necessary due to space restrictions, contingency plans for refueling, materials storage, and handling would be verified with the EI before initiating activities in restricted areas that are exceptions to these criteria.

Entrega also would correspond with all landowners prior to construction to obtain the location(s) of known private water supply wells on their property.

Our Procedures require that refueling activities and hazardous material storage occur at least 100 feet from a wetland, waterbody, or designated municipal watershed areas. The BLM believes that the separation distance should be increased to 500 feet in order to minimize the potential that groundwater resources could be damaged by pipeline construction. Therefore, **we recommend that on federal lands, Entrega should restrict refueling, lubricating, and hazardous material storage to at least 500 feet away from the edge of any stream, wetland, ditch, or other waterbody, unless written approval from the BLM is received.**

We believe that implementation of the measures and the procedures contained in Entrega's SPCC Plan would avoid or minimize potential impacts associated with vehicle and equipment refueling and lubricating activities, hazardous material storage and handling, and responses to spills or leaks of hazardous materials during construction of the project. During future operation and maintenance activities, Entrega would continue to adhere to standards within its Plan, Procedures, and POD to prevent contamination of groundwater resources from potential spills of hazardous materials. Future variances from these procedures would require the approval of the FERC and the affected land management agency or landowner. Given the

low probability of a pipeline leak and the physical and chemical properties of processed natural gas, adverse impacts to groundwater resources would not be anticipated during operation and maintenance of the pipeline and its associated facilities. Overall, we believe that construction and operation of the proposed project would not significantly impact groundwater resources.

3.3.2 Surface Water

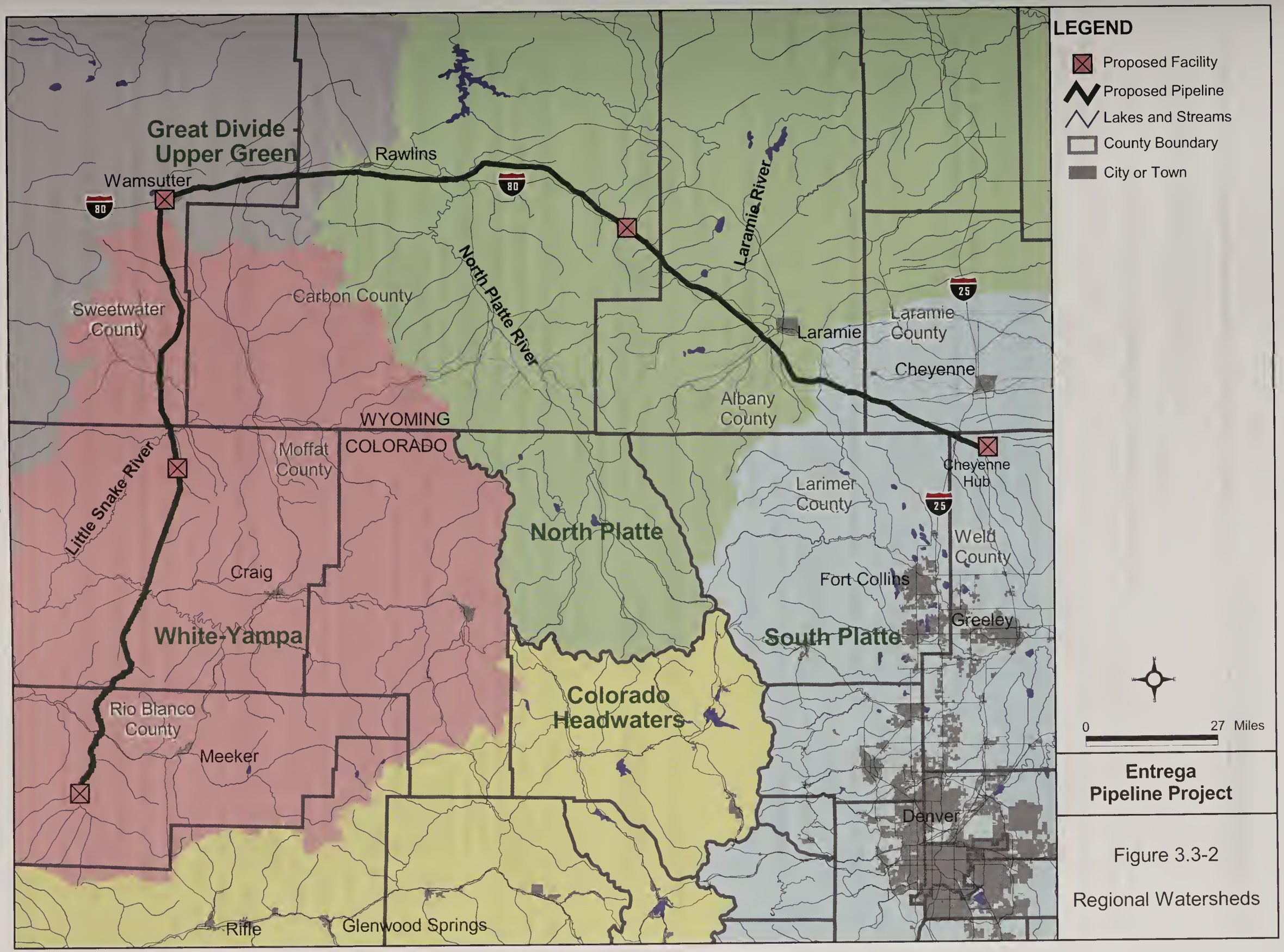
Major Watersheds

The proposed pipeline would cross two major watersheds basins, the Colorado River and the Platte River Basins. Within these major basins, the route would cross four regional watersheds: the Upper Green River, Yampa and White Rivers, North Platte River, and South Platte River Watersheds. **Figure 3.3-2** illustrates the location of the major basins and their watersheds as well as some of the major rivers within the project area.

Major and/or sensitive waterbodies located along the pipeline route are identified in **table 3.3-2**. The Colorado River Basin contains the White and Yampa Rivers and tributaries of the Green River. Both the White and Yampa Rivers would be crossed by the proposed pipeline route (MPs 15.1 and 50.5, respectively). Both the Upper Green River and White and Yampa Watersheds are sparsely populated. In these watersheds, the majority of the waterbodies crossed by the proposed pipeline route fully support their designated uses. The North Platte River Basin Watershed is the most densely populated drainage basin in Wyoming. Agricultural, industrial, and recreational uses of the North Platte River are widespread (Wyoming Department of Environmental Quality [WDEQ] 2002). The South Platte River Basin Watershed has the largest human population of any river basin in Colorado, with approximately 3 million people or 70 percent of the state's population (Colorado Department of Public Health and Environment [CDPHE] 2004). The flow in the lower third of the South Platte River is almost completely controlled by agricultural water management activities (CDPHE 2004).

In Colorado and Wyoming, 29 perennial waterbodies would be crossed by the proposed pipeline a total of 44 times. Intermittent waterbodies would be crossed a total of 597 times, with some waterbodies being crossed several times by the proposed pipeline route. Of the total number of crossings, 17 perennial waterbody crossings and 120 intermittent waterbody crossings would occur in Colorado. In Wyoming, 27 perennial waterbody crossings and 477 intermittent waterbody crossings would occur. Of the perennial waterbodies that would be crossed, five are greater than 100 feet wide (water's edge to water's edge) at the crossings site. Entrega proposes to use the HDD method for construction at the White and Yampa Rivers. All other waterbody crossings are proposed to be open-cut. No waterbodies are designated as Section 10 navigable waters under the Rivers and Harbor Act, as defined by 33 CFR, Section 328.

During construction, impacts to surface water resources would be minimized or avoided by the use of standard practices as outlined in Entrega's Plan, Procedures, and POD and as described in section 2.3.2.3. Measures would be implemented at major river crossings and at crossings of deeply incised drainages to ensure that the drainage channel and banks were stabilized to prevent erosion and the possibility of exposing the pipeline (appendices E and F). Temporary use areas would be required at waterbody


LEGEND
Proposed Facility
Proposed Pipeline
Lakes and Streams
County Boundary
City or Town
Great Divide - Upper Green
Wamsutter
Rawlins
80
Sweetwater County
Carbon County
North Platte River
Laramie River
Laramie
Laramie County
25
Cheyenne
Albany County
WYOMING
COLORADO
Moffat County
Little Snake River
Cheyenne Hub
Larimer County
North Platte
Weld County
Fort Collins
Craig
Greeley
White-Yampa
South Platte
Colorado Headwaters
Rio Blanco County
Meeker
Denver
Rifle
Glenwood Springs
0
27 Miles
Entrega Pipeline Project
Figure 3.3-2
Regional Watersheds

2/7/05

Table 3.3-2
Major and Sensitive Waterbodies

State/MP	Waterbody Name	Sensitivity	State Water Quality Classification
COLORADO			
Multiple crossings (2.7 to 13.7)	Piceance Creek	Scientific reference site; adjacent hayfields.	AqLife Warm2; Rec2; Agriculture
15.1	White River	Threatened and/or endangered species present; >100 feet; surface water intakes located approximately 30 miles downstream of the crossing location.	AqLife Cold1; Rec1; Water Supply; Agriculture
Multiple crossings (largest at 29.9)	Deep Channel Creek	>100 feet.	AqLife Warm2; Rec2; Agriculture
50.5	Yampa River	Threatened and/or endangered species present; >100 feet.	AqLife Warm1; Rec1; Water Supply; Agriculture
84.5	Little Snake River	>100 feet.	AqLife Cold1; Rec1; Water Supply; Agriculture
WYOMING			
192.7	North Platte River	>100 feet; surface water intake located within 3 miles downstream of the crossing location.	2AB
225.5	Medicine Bow River	Coldwater fishery.	2AB
Multiple crossings (237.3 to 273.8)	Rock Creek	Surface water intake located within 3 miles downstream of the crossing location.	2AB
260.9	Little Laramie River	Coldwater fishery.	2AB
274.4	Laramie River	Coldwater fishery.	2AB

Colorado

- AqLife Cold 1 = (subset of aquatic life) waters capable of sustaining a wide variety of coldwater biota, including sensitive species, where physical habitat, water flows or levels, and water quality result in no substantial impairments.
- AqLife Warm 1 = (subset of aquatic life) waters capable of sustaining a wide variety of warmwater biota, including sensitive species, where physical habitat, water flows or levels, and water quality result in no substantial impairment.
- AQLife Warm 2 = (subset of aquatic life) waters not capable of sustaining a wide variety of warmwater biota, including sensitive species, due to physical habitat, water flows or levels, or uncorrectable water quality conditions.
- Rec1 = (subset of recreation) waters suitable or intended to become suitable for recreational activities (e.g., swimming, rafting, kayaking, tubing).
- Rec2 = (subset of recreation) waters not suitable or intended to become suitable for primary contact recreation uses, but are suitable for wading, fishing, and other streamside activities.
- Agriculture = waters suitable or intended to become suitable for irrigation of crops and not hazardous for use by livestock.
- Water Supply = waters suitable or intended to become suitable for potable water supplies.

Wyoming

- Class 2 = Waters known to support fish or drinking water supplies. Class 2AB waters support game fish populations and nursery areas and have sufficient water quality and quantity to support drinking water supplies.

crossings and, unless impractical due to topography or other technical constraint, these areas would be set back at least 50 feet from the edge of the waterbody. Deviations from this 50-foot setback would require approval of the FERC prior to construction.

Site-Specific Waterbody Crossing Plans

Entrega prepared Site-Specific Waterbody Crossing Plans proposing HDD crossings for the Yampa and White Rivers and open-cut crossings of the Little Snake River, North Platte River, Medicine Bow River, and Rock Creek (see appendix F). Our review of these plans indicates that additional information would be necessary prior to their approval and implementation. At the White and Yampa Rivers, for instance, it is unclear where the pipe stringing area for each HDD pullback would be located; what area would be required for the entry and exit holes and for spoil and drilling mud storage; how the equipment would be staged on the site; and the volume and source of water needed for drilling. Entrega would have to provide this information before construction at the White and Yampa Rivers were approved.

In addition, Entrega has provided no justification for the 455-foot-long by 100-foot-wide portion of the extra workspace on the north side of the White River. This portion of the workspace was originally identified when an open-cut crossing of the river was proposed; its need for the proposed HDD crossing is not apparent. Without justification, we will be unable to complete our impact analysis or approve Entrega's site-specific plan for crossing the White River. Therefore, **we recommend that Entrega file with the Secretary, within the comment period for the draft EIS, revised Site-Specific Waterbody Crossing Plans for each HDD crossing which clearly indicate:**

a. **the location of the pipe stringing area for pullback;**
b. **the dimensions for the entry and exit holes and areas used for spoil and drilling mud storage;**
c. **the volume and source of water needed for drilling;**
d. **whether drilling mud would be stored in excavated and lined pits or in portable tanks; and**
e. **where drilling mud and cuttings would be disposed.**

Each HDD plan should be accompanied by a scale diagram (scale not smaller than 1:2,400) showing the location and dimension of all temporary workspaces, the arrangement of equipment on the site, and all environmental controls. Each revised plan should clearly justify the size and extent of all temporary workspaces associated with the waterbody crossing.

It also is unclear why Entrega chose the north side of the river for its HDD entry site. This would place the pipe stringing and pullback area in the wetter (south) side of the river. As indicated above, this information is needed for a complete analysis of impacts. Therefore, **we recommend that Entrega file with the Secretary, within the comment period for the draft EIS, an explanation for the decision to place the drill entry site and a large extra workspace on the north side of the White River, and a description of the measures it would take to protect wet areas on the south side of the river during HDD activities.**

Entrega's Procedures state that extra workspaces would be located at least 50 feet away from the water's edge, except where the adjacent upland consists of actively cultivated or rotated cropland or other disturbed land. However, the Site-Specific Waterbody Crossing Plans repeatedly state that a 10-foot buffer zone would be maintained at all waterbody crossings. From evaluation of the open-cut crossing of the Little Snake River, for example, it is unclear why a 50-foot setback is not proposed. Analysis and approval of the Site-Specific Waterbody Crossing Plans cannot be completed without this justification. Therefore, **we recommend that Entrega file with the Secretary, within the comment period for the draft EIS, revised**

Site-Specific Waterbody Crossing Plans that clearly indicate the location and justification for any extra workspace that would be located less than 50 feet from the water's edge.

Water Supply Watersheds

In Colorado, no surface water intakes are located within 3 miles downstream of waterbody crossings. In Wyoming, there are surface water intakes located within 3 miles downstream of the North Platte River (MP 192.7) and Rock Creek (MP 237.3) crossings (Parker 2004). The surface water intake at the North Platte River is located approximately 1 mile north of the proposed waterbody crossing at a rest area operated by the Wyoming Department of Transportation. Water is used at the rest area for irrigation and as a potable source. The surface water intake located at Rock Creek is located approximately 0.9 mile north of the proposed crossing and is used by the Town of Rock River as a potable water source (Lemler 2004).

Based on review of USGS topographic maps, the pipeline route would cross one aqueduct in Colorado at MP 52.3 and three aqueducts in Wyoming (MPs 212.5, 293.0, and 305.3).

In Wyoming, the operators of the surface water intakes within 3 miles of the pipeline have indicated that they have flexibility regarding an interruption of water flow or can use alternative intakes buried beneath the river bed to minimize the uptake of turbid water (Jaure 2004; Lemler 2004). Because open-cut construction techniques would result in short-term increases in sediment loads that could temporarily impact surface water quality, **we recommend that Entrega continue to consult with the water supply operators and the appropriate federal and state agencies regarding potential impacts on water supplies and the need for specific mitigation measures during pipeline construction.**

Water Quality

In order to minimize potential impacts on water quality, Entrega would adhere to the measures contained in its Procedures (appendix B), including, but not limited to: installing and maintaining sediment barriers to prevent silt-laden water from entering wetlands and waterbodies; restoring original contours; and revegetating disturbed areas.

The accidental release of hazardous materials (fuels, lubricants, and coolants) used by heavy equipment during pipeline installation could adversely affect aquatic species and contaminate public water supplies that rely on surface water intakes located downstream of the waterbody crossing. Entrega's SPCC Plan (Entrega 2004d) would minimize the potential impact of spills of these hazardous materials. Furthermore, Entrega would immediately notify the operators of any accidental releases of hazardous materials that may impact their water supply. Entrega would comply with NPDES permit requirements for water discharges associated with construction activity.

Public scoping comments raised a concern regarding construction activities and the potential to elevate selenium levels in local waters. High selenium concentrations are often due to naturally occurring conditions, irrigated agricultural land, or the result of resource extraction. Currently, one waterbody crossed by the proposed project, the North Platte River, has been identified as exceeding the water quality standard

for selenium (WDEQ 2004; CDPHE 2004). Elevated selenium levels were reported near Casper, Wyoming, which is located approximately 80 miles north of where the pipeline route crosses the North Platte River.

Construction of the proposed pipeline is not anticipated to cause an increase in selenium levels in local waters because construction activities would impact a relatively small area and would be limited in duration. Most importantly, construction would not involve activities suspected of increasing the concentration of selenium in ground and surface waters, such as the prolonged discharge of water to the land surface or the long-term exposure of surficial or bedrock formations to precipitation and/or runoff.

No waterbodies crossed by the proposed pipeline route receive effluent from municipal or industrial wastewater treatment facilities within a 3-mile radius of the proposed crossing locations (EPA 2004c).

Sediment Contamination

The proposed pipeline route would not cross any watersheds containing areas of probable concern for sediment contamination (EPA 1997). Additionally, none of the waterbodies crossed by the pipeline route are known to contain contaminated sediments (Vranka 2004; Parker 2004).

Hydrostatic Test Water

To verify the integrity of the pipeline before placing it into service, Entrega would conduct a series of hydrostatic tests. These tests would involve filling the pipeline with water, pressurizing it, and then checking for pressure losses due to pipeline leakage. As currently proposed, the pipeline would be divided into 11 hydrostatic test sections; see Entrega's Hydrostatic Test Plan (appendix I). **Table 3.3-3** identifies the surface water sources of hydrostatic test water, the approximate water volumes that would be required, the rate of withdrawal, and the withdrawal and discharge locations.

Table 3.3-3
Currently Proposed Hydrostatic Test Water Volumes and Sources

Withdrawal MP	Discharge MP(s)	Days of Use	Max. Withdrawal Rate	Volume of Water (approximate gallons)	Potential Water Sources
14.8	14.8	7	5,000 gpm	5,900,000	White River
	15.0	10	4% of average Aug/Sept flow	2,400,000	
50.6	50.6	6	3,000 gpm 5% of average Aug/Sept flow	6,100,000	Yampa River
83.6	84.5	12	1,500 gpm	5,100,000	Little Snake River
		16	10% of average	1,600,000	
		19	Aug/Sept flow	5,500,000	
193.0	193.0	6	5,000 gpm	4,800,000	North Platte River (City of Rawlins)
	287.0	15	5% of average	19,700,000	
	313.0	27	Aug/Sept flow	5,100,000	
			Total	**56,200,000**	

Entrega has stated that it would either purchase water from licensed sources or landowners, or appropriate water from surface waters for construction and hydrostatic testing. If discharge rates of hydrostatic test water are not carefully controlled, discharges into surface waters could cause erosion of the streambanks and streambottoms, resulting in a temporary increase of sediment load and destruction of habitat. Entrega would minimize the potential for these discharge effects through the use of energy-dissipating devices (e.g., filter bag, straw bale structure) that would disperse and slow the velocity of discharge water.

The discharge of hydrostatic test water into surface waters could potentially contaminate state water, depending on the waterbody's designated use classification. Contamination in the hydrostatic test waters would likely be low, since the pipeline would be constructed entirely from new internally coated pipe. Nevertheless, Entrega would be required to obtain permits from the appropriate agencies and adhere to the stipulations outlined in its NPDES permits when discharging hydrostatic test water. This would include the requirement for Entrega to test and, if necessary, treat the hydrostatic test water prior to discharging the water.

Impacts on fisheries resources from sedimentation and water depletions (associated with hydrostatic test water withdrawals) are discussed in greater detail in sections 3.5.1 and 3.6.3.

Overall, impacts to surface water resources from construction would be short-term and minimal. Construction would cause temporary increases in sediment, but these impacts would be minimized by setbacks, sediment barriers, and streambank stabilization. Waterbody crossings would be completed within several days, minimizing the duration of the effects.

Surface water would not be required for the operation of the pipeline and aboveground facilities. To minimize sedimentation and to prevent contamination of surface water resources from spills of hazardous materials associated with future maintenance activities conducted along the pipeline ROW, Entrega would be required to adhere to construction and reclamation standards within Entrega's Plan, Procedures, and POD. Future variances from these plans and procedures would require the approval of the FERC, the affected land management agency, and affected landowner. Given the low probability of a pipeline leak (particularly a leak in a location that could enter surface water) and the physical and chemical properties of processed natural gas, adverse impacts on water resources are not expected.

3.3.3 Wetlands

Wetlands occupy about 8.9 miles (3 percent) of the proposed pipeline route (**table 3.3-4**). Of this distance, 4.1 miles of wetlands occur in Colorado and 4.8 miles occur in Wyoming. Wetland vegetation communities occurring along the proposed project area include emergent, scrub-shrub, littoral/playa, and shoreline and aquatic bed wetlands. The most common type of wetland along the proposed project area is emergent. Emergent wetlands are dominated by rooted herbaceous vegetation, while scrub-shrub wetlands are dominated by woody species less than 20 feet in height. Littoral/playa wetlands are shallow wetlands that are most obvious in the spring due to snowmelt, precipitation, and high water table. Shoreline and aquatic bed wetlands are found adjacent to or located within surface waters. Water sources for wetland communities include seepage from ditches and canals, irrigation runoff, sub-irrigation, and ponding on

poorly drained soils. Common wetland species identified along the pipeline route are included in section 3.4, **table 3.4-1**.

Table 3.3-4
Summary of Wetland Types Affected by Construction and Operation

State	NWI Wetland Classification[1]	Length of Wetland Crossed (miles)	Wetland Acreage Affected During Construction[2]	Wetland Acreage Affected During Operation[3]
COLORADO				
	PSS	0.2	2.9	1.4
	PEM	3.6	45.3	27.0
	PAB	0.2	2.1	1.2
	PUS	0.1	0.3	0.2
Colorado subtotal		4.1	50.6	29.8
WYOMING				
	PSS	0	0	0
	PEM	4.5	44.8	27.4
	PAB	0	0	0
	PUS	0.3	2.6	1.7
Wyoming subtotal		4.8	47.4	29.1
PROJECT TOTAL[4]				
	PSS	0.2	2.9	1.4
	PEM	8.2	90.1	54.4
	PAB	0.2	2.1	1.2
	PUS	0.3	2.9	1.9
		8.9	98.0	58.9

[1] NWI Wetland Types
PSS - Palustrine scrub-shrub
PEM - Palustrine emergent
PAB - Palustrine aquatic bottom
PUS - Palustrine unconsolidated shoreline

[2] Wetland locations and types were generated from digital NWI maps. Acreages for pipeline disturbance were calculated based on a 75-foot-wide ROW centered over the pipeline. Disturbances due to temporary work areas occurring in NWI mapped areas were included, as well as a section of the Meeker Hub Compressor Station, which was determined to be within the NWI mapped area. Disturbance attributed to temporary workspace areas that fall within the mapped NWI wetlands are included in the total.

[3] Based on the amount of wetlands within the 50-foot-wide new permanent easement; however, because the wetlands are emergent and no vegetation maintenance is anticipated, no operational impact from the pipeline itself would occur except in areas designated palustrine scrub-shrub, where a permanent 10-foot-wide ROW would be maintained.

[4] The numbers in this table have been rounded for presentation purposes. As a result, the totals may not reflect the exact sum of the addends in all cases.

Based on the digital NWI data, a total of 96 wetlands would be crossed by the proposed pipeline; 45 in Colorado and 51 in Wyoming. These wetlands are identified in appendix J and on the project maps located at the end of this document. Approximately 93 percent of the wetlands crossed are characterized as emergent, with the remaining 7 percent comprised of scrub-shrub, littoral/playa, and shoreline and aquatic bed wetland types. While no farmed or forested wetlands would be crossed by the proposed project, several wetlands are located in actively grazed rangeland.

Construction in wetlands would primarily result in temporary effects including the temporary loss of wetland vegetation, soil disturbance, and temporary increases in turbidity and fluctuations in wetland hydrology. To minimize these impacts to wetlands, Entrega would use a 75-foot-wide construction ROW through wetland areas, would follow the measures identified in Entrega's Procedures and POD, and would locate the

pipeline route immediately adjacent to existing utilities, where possible, to minimize impacts by overlapping the construction ROW along previously disturbed corridors.

Temporary use areas would be required at wetland crossings and, unless impractical due to topography or other constraint, these areas would be set back at least 50 feet from the edge of the wetland. While Entrega's Site-specific Waterbody Crossing Plans identify a setback of less than 50 feet at the Yampa and Little Snake crossings, deviations from the standard 50-foot setback would require approval of the FERC prior to construction.

After the pipeline is constructed, Entrega has proposed to seed non-saturated wetlands with annual ryegrass in accordance with its Procedures. While non-native annual ryegrass is not anticipated to persist in wetlands, the BLM has expressed concern that ryegrass could become established in nearby upland areas, particularly in wheat fields. Consequently, **we recommend that Entrega use a commercial hybrid (sterile) cover crop for temporary stabilization and reclaim wetlands with native species.** No lime or fertilizer would be used in wetland areas. Additionally, **Entrega should file with the Secretary its project-specific Wetland Restoration Plan, indicating by MP how wetlands disturbed by project activities would be restored to pre-construction conditions, for review and written approval by the Director of OEP prior to commencing service. Entrega should include the comments of the land management and state agencies with whom it consulted during plan development.**

Wetland vegetation would be temporarily lost during construction. A total of 98.0 acres of wetlands (50.6 acres in Colorado and 47.4 acres in Wyoming) would be affected by pipeline and aboveground facility construction (**table 3.3-4**). In general, emergent wetland vegetation would be expected to reestablish within 3 years after construction, while scrub-shrub vegetation would likely take somewhat longer.

None of the aboveground facilities are located within NWI-mapped wetlands. At the Meeker Hub Compressor Station, a portion of the site would be located within the Federal Emergency Management Agency-defined 100-year floodplain and would occupy about 5 acres of NWI-mapped emergent wetlands. However, aboveground facilities at the Meeker Hub Compressor Station do not appear to be located within either the floodplain or wetlands. Entrega would confirm wetland locations at the site prior to construction.

Similar to forest areas, Entrega would periodically remove woody species from wetlands to facilitate post-construction inspections of the permanently maintained pipeline ROW. A 30-foot-wide strip centered over the pipeline would be maintained clear of trees taller than 15 feet to facilitate pedestrian and aerial inspections. Additionally, a 10-foot-wide strip centered over the pipeline would be maintained clear of woody vegetation to allow vehicles rapid access along the ROW in case of emergencies. As a result, operational impacts in wetlands would result in the conversion of <1 acre of scrub-shrub wetland to herbaceous wetland within the 10-foot-wide maintained strip (**table 3.3-4**).

3.4 Vegetation

3.4.1 Vegetation Communities

Five general vegetation communities characterize the proposed EPP area: grassland, shrubland, agricultural land, woodlands, and wetlands (**table 3.4-1**, **figure 3.4-1**). The two predominant vegetation communities that are crossed by the proposed pipeline route are grassland and shrubland, comprising 31 and 61 percent based on acres of disturbance, respectively, of the vegetated lands. Wetlands are discussed in section 3.3.3. Open water and waterbodies (including dry washes, discussed in section 3.3.2), commercial land, and areas with bare rock account for less than 1 percent of the disturbance along the proposed pipeline route and do not display vegetation characteristics; consequently, they are not discussed in this section of the EIS (see section 3.7).

Construction of the proposed pipeline and aboveground facilities (including powerline easement) would disturb approximately 1,546 acres of grasslands, 3,078 acres of shrublands, 199 acres of agricultural land, and 211 acres of woodlands (**table 3.4-2**). The primary impact of the proposed project on vegetation would be the cutting, clearing, and/or removal of existing vegetation within the construction work area. Temporary ROW and additional temporary workspace areas cleared for construction would be reseeded and allowed to revegetate naturally with tree and shrub species after construction is completed.

To minimize environmental impacts and ensure site stabilization and revegetation, Entrega would follow construction procedures detailed in its POD, including its Plan and Procedures with approved variances and its Construction, Mitigation, and Reclamation (CM&R) Plan (Entrega 2004c). The CM&R Plan describes methods that would be implemented to stabilize disturbed sites by reducing runoff and erosion; to reestablish a vegetation condition comparable to preconstruction conditions; to restore functional qualities of the area including wildlife habitat and livestock forage; and to prevent degradation of areas off the construction ROW. Additionally, Entrega would follow the measures outlined in the SPCC Plan and the Storm Water Pollution Prevention Plan (Entrega 2004e) to minimize and mitigate potential impacts on wetlands.

Upon completion of construction, disturbed areas would be revegetated in compliance with Entrega's Plan, Procedures, and CM&R Plan or in accordance with site-specific requirements from applicable federal, state, and local agencies. Timely stabilization of the construction ROW and reseeding with an appropriate seed mix would minimize the duration of vegetation disturbance. The FERC and BLM staff would inspect the pipeline ROW for several years to ensure Entrega's compliance with revegetation standards established in Entrega's Plan and Procedures.

After construction, the vegetation along the majority of the pipeline ROW would be allowed to revert to pre-construction conditions. Entrega would reduce the width of the permanently maintained ROW in woodland areas (i.e., pinyon-juniper, ponderosa pine, and riparian woodlands); however, given the long recovery period for woodlands, maintenance of vegetation in the future would be nominal. Impacts to vegetation from permanent aboveground facilities would be limited to those required for the operation of the compressor stations, pigging facilities, meter stations, mainline valves, and permanent access roads (about

Table 3.4-1
Vegetation Communities Crossed by the Entrega Pipeline

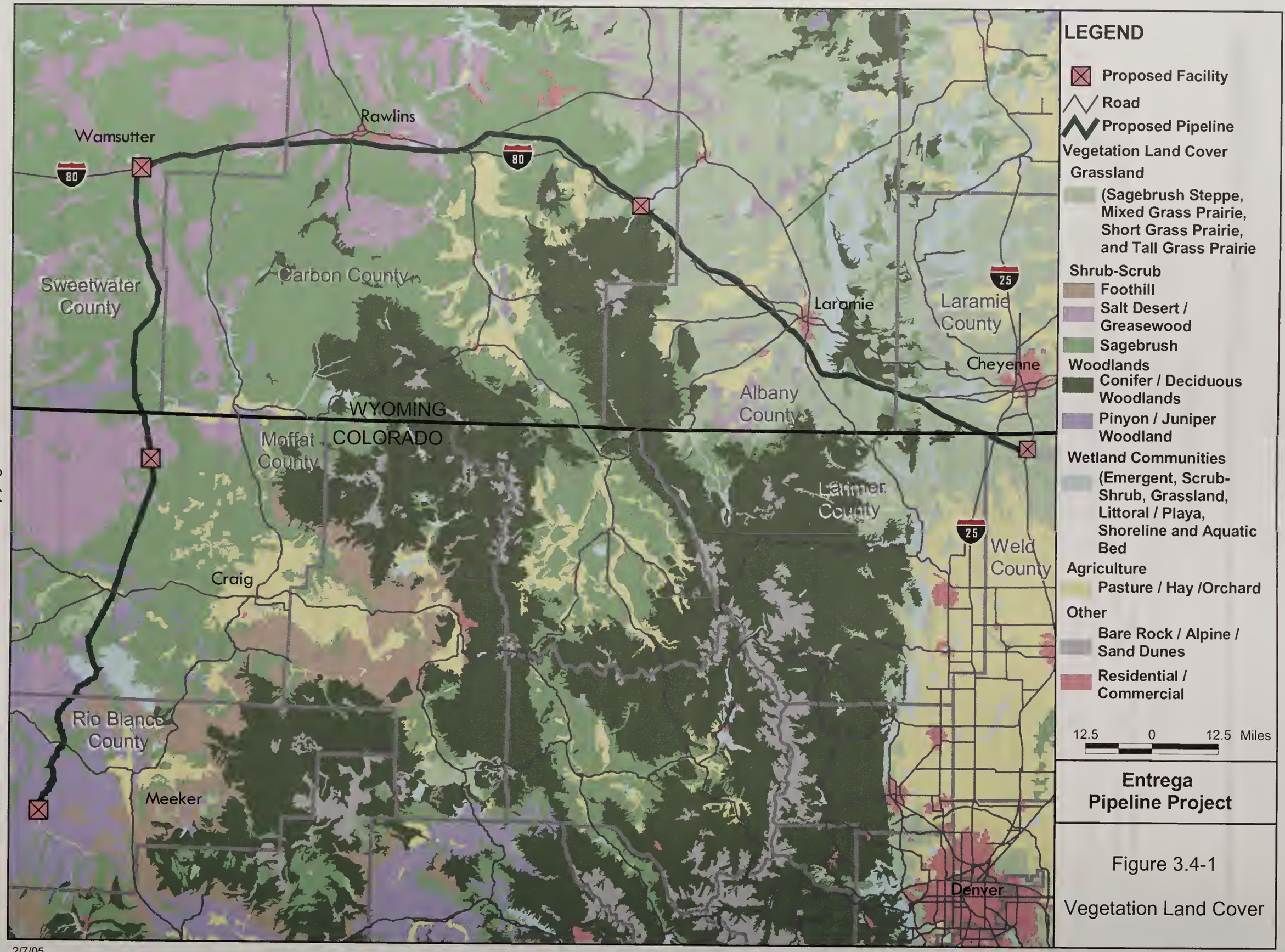
Community Designation	Milepost[1] (MP)	Vegetation Sub-Community	General Description	Common Species
Grassland	40-42 112-117 238-246 248-260 263-285 287-289 291-294 295-301 302-304 305-314 315-327	Sagebrush steppe	• Combination of shrubs and grasses where grasses are 50 percent or more of the species composition. • Density and variety of species in the community is greatly affected by fire suppression.	big sagebrush, black sagebrush, broom snakeweed, rabbitbrush, prickly pear, mountain mahogany, ephedra, fourwing saltbush, winterfat, blue grama, bottlebrush squirreltail, Indian ricegrass, needle and thread grass, and western wheatgrass
		Mixed grass prairie	• Distinguished from short grass prairie by a higher floristic diversity and an absence of buffalo grass. • Found throughout eastern Wyoming.	blue grama, sideoats grama, bluebunch wheatgrass, western wheatgrass, Indian ricegrass, needlegrasses, Sandberg bluegrass, New Mexico feathergrass, green needlegrass, fringed sagewort, prickly pear, prairie sandreed, little bluestem, sand bluestem, common reed, blowout grass, lemon scurfpea, galleta, and foxtail barley
		Short-grass prairie	• Bunch grasses with total cover of trees and shrubs less than 25 percent of total vegetation cover. • Buffalo grass is an indicator species. • Found primarily in northeast Colorado.	buffalo grass, blue grama, western wheatgrass, needlegrass, prickly pear, fringed sagewort, Indian ricegrass, and broom snakeweed
Shrub-scrub	15-17 20-25 27-36 39-40 42-50 51-85 86-93 94-112 117-212 213-225 226-237 285-287 314-315	Sagebrush	• Combination of dense sagebrush, with a sparse understory of grasses, forbs, and smaller shrubs (<50 percent cover). • Occurs throughout central and western Wyoming and northwestern Colorado.	big sagebrush, black sagebrush, sand sagebrush, broom snakeweed, rabbitbrush, prickly pear, mountain mahogany, horsebrush, spiny hopsage, ephedra, saltbush, Indian ricegrass, needle and thread grass, and western wheatgrass
		Salt desert scrub/greasewood	• Occurs as a mosaic within sagebrush communities, dominated by greasewood. • Found throughout central and western Wyoming and northwestern Colorado.	greasewood, saltbush, spiny hopsage, budsage, saltbush, and winterfat
		Foothill shrub-scrub	• Mountain mahogany found within northern mixed prairie and short grass prairie habitats. • Gambel oak extends from Colorado into Wyoming on the western slope of the Rocky Mountains.	mountain mahogany, scrub oak (Gambel oak)

Table 3.4-1 (Continued)

Community Designation	Milepost[1] (MP)	Vegetation Sub-Community	General Description	Common Species
Agriculture	-0.5-12 50-51 212-213 246-248 260-263 304-305	Pasture/ hay/ orchard	• Natural vegetation is not evident. • Land currently used for grazing or horticulture.	irrigated hay and alfalfa fields, livestock feeding areas, horticultural areas
Woodlands	12-15 17-20 25-27 36-39 85-86 93-94 226 235 237-238 289-291 294-295 301-302	Pinyon-juniper woodland	• Commonly found on dry ridge tops with shallow soils. • Highly competitive and supports a highly variable understory. • Pinyon component increases at higher elevations.	Colorado pinyon pine, Utah juniper, Rocky Mountain juniper, big sagebrush, black sagebrush, mountain mahogany, snakeweed, little rabbitbrush, Sandberg bluegrass, needle and thread grass, Indian ricegrass, squirreltail, western wheatgrass, stemless golden weed, oval buckwheat, yellow-eye cryptantha, scarlet gilia, dwarf cateye, brittle prickly pear, claretcup, and heartleaf twistflower
		Ponderosa pine woodland	• Patches on rocky soils in eastern Wyoming.	Ponderosa pine, mountain mahogany, blue grama, sideoats grama, bluebunch wheatgrass, western wheatgrass
		Riparian woodland	• Found adjacent to surface waters.	narrow leaf cottonwood, willow
Wetlands[2]		Emergent	• Dominated by rooted herbaceous vegetation.	baltic rush, inland saltgrass, alkali sacaton, sedges, bluejoint reedgrass, and bent grass
		Scrub-shrub	• Scrub-shrub wetlands are dominated by woody vegetation less than 20 feet in height.	willow, thinleaf alder, river birch, red-osier dogwood, and aspen
		Littoral/playa	• Most obvious in spring due to snowmelt, precipitation, and high water table. • Wetlands that have been dry for over a year frequently have a thin layer of grasses and forbs on the bottom.	Due to their ephemeral nature, the entire composition of these wetlands can change within a day
		Shoreline and aquatic bed	• Found adjacent to or located within surface waters.	narrowleaf cottonwood, plains cottonwood, salt cedar, willow, thinleaf alder, river birch, red-osier dogwood, aspen, wild rose, serviceberry, and snowberry

[1]Mileposts are broad generalizations. See project maps at the end of this document for more detailed vegetation description by milepost.

[2]Wetland communities are delineated by vegetation type. Sub-communities indicated in this table are shown in **figure 3.4-1**.



Entrega Pipeline Project

Figure 3.4-1

Vegetation Land Cover

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Table 3.4-2
Acres of Land Within Construction and Operation Rights-of-Way[1]

Facility	Grassland		Shrub-scrub		Agriculture		Woodlands		Other	
	Const.	Oper.	Const.	Oper.	Const.	Oper.	Const.	Oper.	Const.	Oper.
Pipeline (main)										
Colorado	122	59	853	399	108	59	128	57	<1	<1
Wyoming	950	465	1,852	880	60	31	73	33	1	<1
Total[2]	1,072	524	2,705	1,279	168	90	201	90	1	<1
Pipeline (laterals)										
Colorado	15	15	0	0	0	0	0	0	0	0
Wyoming	0	0	7	7	0	0	0	0	0	0
Total[2]	15	15	7	7	0	0	0	0	0	0
Additional Temporary Workspace Areas										
Colorado	9	0	87	0	19	0	8	0	0	0
Wyoming	99	0	176	0	7	0	2	0	0	0
Total[2]	108	0	263	0	26	0	10	0	0	0
Pipe Storage and Contractor Yards[3]										
Colorado	20	0	38	0	0	0	0	0	3	0
Wyoming	324	0	0	0	0	0	0	0	26	0
Total[2]	344	0	38	0	0	0	0	0	29	0
Aboveground Facilities[4,5]										
Colorado[6]	5	5	35	35	5	5	0	0	0	0
Wyoming	0	0	20	20	0	0	0	0	0	0
Total[2]	5	5	55	55	5	5	0	0	0	0
Permanent Access Roads										
Colorado	<1	<1	0	0	0	0	0	0	0	0
Wyoming	<1	<1	6	6	0	0	0	0	0	0
Total[2]	<1	<1	6	6	0	0	0	0	0	0
Powerlines										
Colorado	2	2	0	0	0	0	0	0	0	0
Wyoming	0	0	4	4	0	0	0	0	0	0
Total[2]	2	2	4	4	0	0	0	0	0	0
Project Total[2,7]	**1,546**	**546**	**3,078**	**1,351**	**199**	**95**	**211**	**90**	**30**	**<1**

Table 3.4-2 (Continued)

Footnotes:

1 Const. – construction. Oper. – operation. Construction ROW; based on a 100-foot-wide construction ROW except for a 75-foot-wide ROW in wetlands and riparian woodlands, and an increased construction ROW width for site-specific construction conditions. Operation ROW; based on a 50-foot-wide operational ROW. Acreage totals do not include developed, commercial land, open water, or barren areas that do not display vegetation characteristics.
2 The numbers in this table have been rounded for presentation purposes. As a result, the totals may not reflect the exact sum of the addends in all cases.
3 Some yards are located on land (e.g., commercial/industrial) that do not display vegetation characteristics.
4 Meter stations and pig launchers and receivers would be located within the 20-acre area associated with compressor station sites. Mainline valves would be constructed within the 100-foot-wide construction ROW and operated within the permanently maintained 50-foot-wide operational ROW, or constructed within meter or compressor station sites.
5 Mainline values are contained within the 50-foot easement, therefore, they are not included with aboveground facilities.
6 This includes the Meeker Hub Compressor Station (meter stations, pig launcher, and mainline valve) that would be located on previously developed land purchased by Entrega from one of its affiliates.
7 Wetland acreages as determined by NWI maps are included within surrounding vegetation types. Refer to **table 3.4-3** for NWI-mapped wetlands.

61 acres of shrubland, 5 acres of grassland, and 5 acres of agricultural land) and mainline valves (about 0.3 acre of grassland, 0.6 acre of shrub-scrub, and 0.1 acre of woodlands). Permanent impacts due to powerlines would be limited to the footprint of the poles, and are therefore negligible.

Grassland

Grassland occurs along about 86 miles (26 percent) of the proposed pipeline route, with sagebrush steppe being the dominant sub-community. Sagebrush steppe is a semi-closed steppe characterized by an overstory of sagebrush and understory of grasses, forbs, and smaller shrubs. Grass species comprise more than 50 percent of the species composition in this community; big sagebrush is the dominant shrub component throughout. The mixed-grass prairie sub-community occurs throughout most of eastern Wyoming and typically supports a high diversity of grasses, including short-, mid-, and tall-grass species. It is distinguished from the short-grass prairie sub-community by having a much higher floristic diversity and an absence of buffalo grass. The short-grass prairie is dominated by bunch grasses less than 20 inches tall. Buffalo grass is considered the indicator species of short-grass prairie.

Long-term impacts may occur on short-grass prairie and sagebrush steppe, as well as native grasslands and shrublands. Recovery of these habitats may take a minimum of 5 to 7 years due to poor soil and low moisture conditions.

Shrub-scrub

Shrubland accounts for approximately 211 miles (64 percent) of vegetation cover that would be crossed by the pipeline route. This community designation includes sagebrush, salt desert shrub/greasewood, and foothills shrub-scrub sub-communities. Sagebrush is the most widespread shrubland sub-community. This vegetation type is characterized by an overstory of big sagebrush and an understory of grasses, forbs, and smaller shrubs. Salt desert shrub/greasewood occurs as a mosaic within sagebrush communities, frequently on the fringes of playas, desert lakes, ponds, rivers, and streams. Foothills shrub-scrub communities consist of both mountain mahogany and scrub oak sub-communities. Mountain mahogany primarily occurs within northern mixed prairie and short-grass prairie habitats. This deciduous shrub forms dense thickets with sparse understory vegetation. It typically occurs on rocky or shallow soils and is often associated with a limestone, sandstone, or shale substrate. In oak scrub, Gambel oak is the dominant shrub, comprising more than a quarter of the total vegetation cover. This sub community does not occur on the eastern slope, but extends from Colorado into Wyoming on the western slope of the Rocky Mountains.

Long-term construction impacts may occur on shrublands, such as sagebrush. Recovery of these habitats may take a minimum of 20 to 30 years due to poor soil and low moisture conditions.

Agriculture

Agricultural land occurs along about 15 miles (5 percent) of the proposed pipeline route. This community is primarily comprised of irrigated hay and alfalfa fields. These areas are used primarily for livestock grazing.

Pasture and hayfields would typically regenerate quickly after cleanup and reseeding of the construction ROW, typically within 2 years. Entrega would reseed pasture and hayfields with seed mixes as requested by the landowner to restore the area to preconstruction conditions. Entrega would not reseed cultivated agricultural areas unless requested by the landowner.

Woodlands

Woodlands occur along about 15 miles (5 percent) of the proposed pipeline route. Woodland sub-communities include pinyon-juniper woodland, ponderosa pine woodland, and riparian woodland. Along the pipeline route, the dominant community is pinyon-juniper woodland. Colorado pinyon pine and Utah juniper dominate the pinyon-juniper woodland plant community. Ponderosa pine woodland is commonly found on lower mountain foothills and slopes. Riparian woodlands occur along many perennial waterbodies and are characterized by cottonwood trees and a variety of riparian shrubs.

Clearing of woodland vegetation within the construction ROW would result in long-term and permanent environmental change. In this region, it is anticipated that regrowth of woodlands to mature conditions could take between 50 to 100 years, depending on the species (long-term impact). Permanent impacts to woodlands would be limited to the permanent corridor, which Entrega would maintain in an herbaceous state by occasional mowing or brush clearing.

Six riparian woodland communities would be crossed by the EPP. These areas are associated with the North Platte River, Medicine Bow River (2), a tributary to Foote Creek, and Rock Creek (2) crossings. Entrega also proposes temporary workspaces within riparian woodlands at the Medicine Bow and North Platte River crossings. To minimize impacts, Entrega has prepared a Riparian Woodland Plan (appendix G). In this plan, Entrega has committed to reduce the construction ROW to 75 feet in riparian woodlands, avoid the removal of trees to the maximum extent practical, leave root systems of small woody vegetation intact along the construction ROW, and not use herbicides and pesticides for vegetation maintenance within 100 feet of a waterbody. Entrega has agreed to reduce the permanently maintained ROW to a 10-foot-wide corridor centered over the pipeline. Further, Entrega's vegetation maintenance program would allow a riparian strip of at least 25 feet wide, as measured from the high-water mark and parallel to the waterbody, to permanently revegetate with native plant species across the entire construction ROW.

The Riparian Woodland Plan provides for minimization of topsoil disturbance, reseeding with seed mixtures approved of by the land managing agency and NRCS, and replanting of trees and shrubs to mimic the surrounding vegetation and density. To facilitate the restoration of riparian woodlands, **we recommend that Entrega conduct pre-construction surveys in woody riparian areas to determine the existing vegetation community composition and density. Based on the results of these surveys, Entrega should reseed and replant with these existing tree and shrub species at pre-construction densities, accounting for intact root masses.**

Also, **we recommend that Entrega file site-specific plans for each of the six riparian woodland crossings with the Secretary for review and approval by the Director of OEP prior to construction. In developing these plans, Entrega should locate temporary workspace areas to avoid riparian woodland to the maximum extent practicable. Entrega should provide detailed justification for any**

temporary workspace area that is not sited to avoid disturbance of riparian woodland. At a minimum, each plan should include:

i. **an inventory of the area of disturbance, based on the preconstruction survey;**
ii. **site-specific measures to avoid or reduce the extent of riparian woodland disturbance;**
iii. **site-specific measures to restore all riparian woodland disturbance to near-preconstruction conditions;**
iv. **an aerial-photo based plot plan showing all areas of disturbance, environmental controls, and restoration measures (scale 1:1,200); and**
v. **specific criteria for assessing restoration success.**

While impacts resulting from construction of the EPP would result in the long-term and permanent loss of woodland vegetation, the effects would be small relative to the available habitat in the region. The project also would cause a small, incremental increase in woodland fragmentation.

Unique, Sensitive, and Protected Vegetation Communities

No unique, sensitive, or protected vegetation communities have been identified within the project area.

3.5 Fish and Wildlife

3.5.1 Fishery Resources

The proposed EPP route would cross a total of 32 different waterbodies in Colorado and Wyoming that support fish species, including 6 that support warmwater fisheries, and 26 that support coldwater fisheries. Waterbodies that provide persistent habitat or are being managed for fish species are presented in **table 3.5-1**. In addition to these perennial waterbodies, the project would cross perennial and intermittent waterbodies a total of 544 times in Colorado and Wyoming. No waterbodies are present within the boundaries of the proposed aboveground facilities.

Table 3.5-1
Fisheries Crossed by the Proposed Project

Waterbody	Intermittent (I)/ Perennial (P)	Fishery Classification	Maximum Crossing Width	Number of Times Crossed	Proposed Crossing Method
Colorado					
Piceance Creek	P	Warmwater	65	10	Open Cut
White River	P	Coldwater	114	1	HDD
Deep Channel Creek	P	Warmwater	137	3	Open Cut
Yampa River	P	Warmwater	219	1	HDD
Little Snake River	P	Coldwater	175	1	Open Cut
Lone Tree Creek	P	Warmwater	<10	1	Open Cut
Wyoming					
North Platte River	P	Coldwater	150	2	Open Cut
Medicine Bow River	P	Coldwater	31	1	Open Cut
Bear Creek	P	Coldwater	<10	1	Open Cut
Wagonhound Creek	P	Coldwater	23	1	Open Cut
Foote Creek	I	Coldwater	61	1	Open Cut
Rock Creek	P	Coldwater	34	2	Open Cut
Onemile Creek	P	Coldwater	11	1	Open Cut
Tributary to Threemile Creek	P	Coldwater	35	1	Open Cut
Threemile Creek	P	Coldwater	10	1	Open Cut
West Fork Dutton Creek	P	Coldwater	<10	1	Open Cut
East Fork Dutton Creek	P	Coldwater	13	1	Open Cut
Cooper Creek	P	Coldwater	<10	1	Open Cut
South Fork Cooper Creek	I	Coldwater	<10	1	Open Cut
Fourmile Creek	P	Coldwater	<10	2	Open Cut
Sevenmile Creek	I	Coldwater	<10	1	Open Cut
Little Laramie River	P	Coldwater	28	1	Open Cut
Alsop Ditch	I	Coldwater	<10	1	Open Cut
Browns Creek	P	Coldwater	57	1	Open Cut
Tributary to Browns Creek	I	Warmwater	<10	2	Open Cut
Laramie River	P	Coldwater	69	1	Open Cut
Harney Creek	I	Warmwater	<10	1	Open Cut
Spring Creek	I	Coldwater	62	1	Open Cut
Dale Creek	P	Coldwater	<10	1	Open Cut
Lone Tree Creek	P	Coldwater	<10	1	Open Cut
Goose Creek	I	Coldwater	227	3	Open Cut
Duck Creek	I	Coldwater	158	1	Open Cut

Representative fish species that are managed within coldwater waterbodies crossed by the proposed pipeline route include brook trout, brown trout, and rainbow trout. Non-game fish species known to occur in these coldwater waterbodies include: brassy minnow, carp, creek chub, common shiner, fathead minnow, Johnny darter, longnose dace, longnose sucker, sand shiner, and white sucker. Trout species, along with walleye that occur in the North Platte and Medicine Bow Rivers and smallmouth bass, channel catfish, and pike that occur in the Yampa River, are game species that offer the potential for recreational or commercial fishing opportunities along the proposed route. Representative fish species that occur within the warmwater waterbodies crossed by the proposed project route include catfish, crappie, bass, yellow perch, white sucker, Iowa darter, and creek chub.

No waterbodies affected by the project contain or have the potential to contain species managed by National Marine Fisheries Service, nor do they support essential fish habitat (EFH) as defined under the Magnuson-Stevens Fishery Conservation and Management Act (Public Law 94-265 as amended through October 11, 1996). Therefore, no EFH would be affected by the project.

Construction-related impacts on fisheries would be primarily dependent on season of construction, duration of in-stream activities, and stream crossing methods. As stated in Entrega's Procedures, construction activities at coldwater fisheries would occur from June 1 to September 30, and from June 1 to November 30 for warmwater fisheries, unless otherwise permitted or restricted by the FWS, Wyoming Game and Fish Department (WGFD), and/or the Colorado Division of Wildlife (CDOW). For example, to protect streams that have both spring and fall salmonid spawning, the WGFD has stated that the crossing of waterbodies classified as coldwater fisheries would be restricted to the period between May 16 and October 14.

Construction-related impacts at waterbody crossings could result from sedimentation and turbidity, streambank erosion, and contamination from fuel and chemical spills. These impacts primarily relate to perennial waterbodies. The extent of impacts on fisheries, if any, would depend on the construction method used to cross the waterbody, duration of instream activity, and the seasonal timing of in-stream construction.

Entrega proposes to use the open-cut crossing method to construct across all perennial waterbodies along the proposed pipeline route, with the exception of the White and Yampa Rivers, which would be crossed by HDD. If successful, an HDD crossing would result in no impact on fisheries. All non-HDD methods would increase sediment loads and turbidity that could adversely affect fishery resources. Increased sediment loads can alter a stream's substrate composition and fill inter-gravel spaces and pool habitats. Increased sediment loads can degrade the existing aquatic habitat by reducing spawning habitat, available rearing habitat, and benthic invertebrate production (the primary food supply of many fish). Increased sediment loads also can adversely affect fish populations by suffocating eggs and newly hatched larvae living in gravels and by abrading sensitive gill membranes of both young and adult fish. However, an open cut crossing is typically the quickest crossing method, involving 1 day or less of in-stream construction for smaller streams and 2 to 3 days for larger waterbodies. Therefore, sedimentation and turbidity resulting from construction would be short-term and generally limited to periods of active construction within a waterbody. Adverse effects to aquatic biota would tend to be localized. Additionally, most of the waterbodies that would be crossed are intermittent and likely would have little to no flow during the mid-summer to late fall construction period. Crossing such waterbodies would have little to no impact on fisheries.

To minimize sedimentation and turbidity impacts during open-cut, flume, or dam-and-pump waterbody crossings, Entrega would adhere to its Procedures, which would ensure that Entrega would store trench spoil at least 50 feet from streambanks, use sediment barriers such as silt fence to prevent or significantly reduce runoff into streams, and complete construction as quickly as possible to shorten the duration of sedimentation and turbidity. Following completion of construction, Entrega would immediately stabilize the construction site, including the streambanks. If circumstances required a construction delay, Entrega would employ adequate site stabilization measures in accordance with its Procedures and permit conditions. In addition, Entrega has agreed to construct during low-flow periods for stream crossings or adhere to the construction windows to avoid spawning periods, as required by the appropriate agency, and would implement crossing methods to avoid or minimize potential sedimentation and turbidity impacts on aquatic species during spawning seasons, as discussed above.

Clearing and grading of vegetation within the construction ROW and additional temporary workspace areas during construction could increase erosion along streambanks and turbidity levels in the waterbodies, as well as cause localized changes in water temperature and light penetration, which could affect aquatic habitat, primary and secondary production, and fish use patterns. Alteration of the natural drainages or compaction of soils by heavy equipment near streambanks during construction could accelerate erosion of the banks, runoff, and the transportation of sediment into waterbodies. The degree of impact on aquatic organisms due to erosion would depend on sediment loads, stream velocity, turbulence, streambank composition, and sediment particle size. Additionally, localized changes in water temperature and light penetration caused by the removal of boulders, woody debris, streambank vegetation, and undercut banks could temporarily displace fish that utilize these features for cover, nesting, and feeding. However, these impacts would be temporary and relatively minor due to the limited amount of total stream bank area affected per waterbody.

To minimize impacts associated with streambank erosion during construction, Entrega would use equipment bridges, mats, and pads to support equipment that must cross the waterbody or work in saturated soils adjacent to the waterbody. In accordance with its Procedures and where topography allows, Entrega would locate additional temporary workspace areas at least 50 feet from the edge of flowing waterbodies, except where site-specific approval has been granted, and limit clearing of vegetation between additional temporary workspace areas and the edge of the waterbody to the certificated construction ROW. Entrega would implement erosion and sediment control measures (e.g., silt fence) to minimize erosion and prevent sediments from leaving the construction site and entering waterbodies. To minimize sedimentation and channel instability impacts to fishes and their habitats, Entrega also would complete in-stream construction activities for open-cut waterbody crossings within 24 hours for minor waterbodies (less than 10 feet wide), within 48 hours for intermediate waterbodies (10 to 100 feet wide), and within 72 hours for major waterbodies (more than 100 feet wide).

State wildlife agencies have expressed concerns about open-cut construction across some waterbodies. In response to these concerns, Entrega has prepared Site-Specific Waterbody Crossing Plans (appendix F). These plans would help minimize sedimentation and ensure channel bank stabilization. The withdrawal and discharge of hydrostatic test water also could affect fisheries. Hydrostatic test water is discussed in detail in section 3.3.2. Entrega has identified the White River (MP 14.8), Yampa River (MP 50.6), Little Snake River

(MP 83.6), and North Platte River (MP 193.0) as the sources of hydrostatic test water (appendix I). To avoid uptake of organic debris or entrainment of aquatic species during water withdrawals, Entrega would install test water intakes with filtering and screening devices, and would suspend the intakes above the stream bottom. Entrega would not use chemical additives during hydrostatic testing.

If discharge rates are not carefully controlled, the discharge of large volumes of hydrostatic test water to surface water sources could temporarily affect the biological uses of the resource. Hydrostatic discharges could result in a change in water temperature and dissolved oxygen levels, increase downstream flows, and contribute to streambank and substrate scour. As described in section 3.3.2, Entrega would use energy dissipating devices and/or filter bags to prevent erosion, streambed scour, suspension of sediments, and excessive streamflow during test water discharges. Entrega would discharge test water directly into surface waters unless otherwise authorized or required by its NPDES permits. Precise discharge locations would depend on the length of the test section and applicable federal, state, and local guidelines. Further discussion of hydrostatic test water withdrawals and associated impacts on federally listed species is included in section 3.6.3.

A direct spill of fuel, drilling fluids, or other hazardous materials into a waterbody could adversely affect aquatic resources. To minimize the potential for spills, Entrega would implement its SPCC Plan, which specifies preventive measures such as personnel training, equipment inspection, and refueling procedures to reduce the likelihood of spills, as well as mitigation measures, such as containment and cleanup, to minimize potential impacts should a spill occur. The SPCC Plan restricts the location of fuel storage, fueling activities, and construction equipment maintenance along the construction ROW and provides procedures for these activities. Training and lines of communication to facilitate the prevention, response, containment, and cleanup of spills during construction activities also are described in the SPCC Plan.

Adherence to the SPCC Plan would prevent a large spill from occurring near surface waters because fuels storage and construction equipment fueling by mobile tankers or mobile tanks is prohibited within 100 feet of the waterbody bank. If a small spill were to occur, adherence to measures in the SPCC Plan would decrease the response time for control and cleanup of the spill, thus avoiding or minimizing the effects of a spill on aquatic resources.

3.5.2 Wildlife Resources

The predominant wildlife habitats along the proposed pipeline route consist of grassland (sagebrush steppe, mixed grass prairie, short-grass prairie), shrub-scrub (sagebrush, salt desert shrub/greasewood, mountain mahogany), woodlands (pinyon-juniper, riparian), wetlands, and agricultural land. These vegetation types support a diversity of wildlife species. This section focuses on species of high economic and/or recreational importance and those that are considered sensitive to human disturbance.

In total, surface disturbance activities would result in the incremental long-term disturbance of approximately 5,064 acres of wildlife habitat. However, due to the linear nature of the project over a large geographic area, these acreages represents far less than 1 percent of available wildlife habitat on a regional basis.

Potential impacts on terrestrial wildlife species from the proposed project can be classified as short-term, long-term, and permanent. Short-term impacts consist of habitat removal, activities associated with project construction, and changes in wildlife habitats lasting less than 5 years. Long-term impacts would consist of changes to wildlife habitats lasting 5 years or more. Permanent impacts result from construction of aboveground facilities that convert natural habitat to natural gas operations. The severity of both short- and long-term impacts would depend on factors such as the sensitivity of the species impacted, seasonal use patterns, type and timing of project activities, and physical parameters (e.g., topography, cover, forage, and climate).

Less mobile or burrowing species may be killed as a result of crushing from construction vehicles and equipment. Other potential impacts include habitat loss or alteration, habitat fragmentation, and animal displacement. Individuals may be permanently displaced and perish due to increased competition or other effects of being forced into sub optimal habitat. Indirect impacts from increased noise and additional human presence also could lead to displacement and lowered fitness. Although the habitat adjacent to the construction zone may support some displaced animals, any species that is at or near its carrying capacity could exhibit increased localized mortality.

Habitat fragmentation is frequently a concern when clearing ROWs. In general, fragmentation can result in an altered wildlife community as species more adaptable to edge habitats establish themselves, while species requiring undisturbed habitats are subject to negative effects. However, fragmentation disturbance to wildlife and wildlife habitats from the proposed EPP is not expected to be significant because a majority of the construction would be adjacent to or overlap an existing cleared natural gas ROW. Thus, new edge habitat would replace existing edge habitat. In addition, most of the pipeline would cross relatively open habitat types (e.g., shrubland, grassland, agriculture). As such, we believe the effects of habitat fragmentation would be minimal.

In order to reduce potential impacts on wildlife from pipeline construction, Entrega has committed to placing earthen ditch plugs, with ramps on either side, at 1-mile intervals along the trench and at well-defined livestock and wildlife trails intersected by the trench. These plugs would provide a means for wildlife to escape if individuals fall into the trench and also would provide a bridge for other wildlife to cross the open trench. Entrega also would leave breaks in the strung and welded pipe, topsoil, and spoil piles at locations that correspond to the earthen trench plugs to allow movement of wildlife and livestock across the construction ROW. The pipeline trench would be inspected on a regular basis during construction and immediately prior to backfilling to identify entrapped animals. Wildlife found in trenches during construction would be coaxed to the nearest ramp and either be encouraged to exit the trench, removed by hand, or trapped (if other methods are unsuccessful). If any animal in the trench is determined to be a sensitive species, only authorized individuals would be allowed to remove it from the trench.

Entrega also would limit the duration that welded pipe would be left above the ditch by lowering the pipe no later than 7 days after pipe segments are joined. This measure also would reduce potential impacts to the movement of wildlife across the construction ROW. Other alternative measures that Entrega is considering include raising the welded pipe string to provide a minimum 5-foot clearance or establishing earthen ramps across the pipe. Such measures would be considered on a case-by-case basis.

In general, providing ditch-plug bridges/escape ramps and breaks in the strung and welded pipe at 1-mile intervals as proposed would provide adequate opportunity for wildlife in most situations to cross or escape from the pipeline trench. However, we are not confident that this approach would be sufficient under all circumstances. Depending on the season of construction and the specific location, spacing the trench plugs/pipeline breaks closer together may be warranted. For example, closer spacing may be needed if construction timing encroached on occupied critical big game winter ranges. In order to provide the opportunity for this practice to be modified as needed, **we recommend that Entrega's Els should, as needed and in conjunction with the agencies' compliance monitors, modify/reduce the spacing of ditch-plug bridges/escape ramps and breaks in the strung and welded pipe at specific locations where the proposed spacing is found to be insufficient, to facilitate wildlife crossover/escape from the ditch.**

Operation of the proposed pipeline would require the permanent maintenance of a 50-foot-wide ROW corridor. In wetlands, a 30-foot-wide ROW would be maintained clear of trees taller than 15 feet, with 10 feet of this permanent ROW maintained clear of all woody vegetation. In addition, 71 acres associated with aboveground pipeline facilities (e.g., compressor stations and meter stations) and permanent access roads also would be maintained during the operation of the project. As a result, approximately 2,084 acres of wildlife habitat would experience incremental long-term or permanent impacts; however, disturbance was calculated based on the 50-foot increment along the entire pipeline. These acreages represent far less than 1 percent of available wildlife habitat on a regional basis but would provide an incremental contribution to habitat fragmentation. In many cases, the acres affected by operational impacts would be included in the acres of long-term impacts attributed to construction, given the long recovery period of vegetation in the region.

Operation of the pipeline also could result in future surface disturbance activities due to maintenance of the pipe (e.g., pothole inspections, repair of pipe, replacement of rectifier beds). Entrega would follow its POD and other measures referenced in this EIS to minimize impacts to wildlife and their habitats during pipeline operation.

Big Game

The primary big game species that occur within the project area are elk, mule deer, and pronghorn antelope (pronghorn). Other less prominent big game species that could potentially occur along the project route are white-tailed deer and Rocky Mountain bighorn sheep. Certain habitat ranges for these species are considered crucial for maintenance of game populations. In Wyoming, the WGFD and the BLM have established several categories based on seasonal use of the habitat. For example, crucial winter range areas are considered essential in determining a game population's ability to maintain itself at a certain level over the long term. Other regions may not usually be a part of a herd's range, but are used as survival areas during extremely harsh winters. Likewise, the CDOW has identified critical winter habitat ranges for elk, mule deer, and pronghorn in Colorado. **Table 3.5-2** summarizes the linear miles and acreage of disturbance that would occur within important big game ranges along the project route.

Table 3.5-2
Crucial Big Game Habitats Affected by the Entrega Pipeline Project

State/Habitat Type	Milepost Locations	Total Length Crossed (miles)	Acreage Affected During Construction[1]	Acreage Affected by Permanent Facilities[2]
COLORADO				
Elk, Mule Deer, and Pronghorn Critical Winter Habitat	15.1 to 28.0 39.5 to 56.0	29.4	437	<1
WYOMING				
Mule Deer Crucial Winter/Yearlong Habitat	85.7 to 89.2 179.8 to 187.6 188.1 to 189.2 192.9 to 197.1 202.0 to 207.7 221.6 to 231.4 252.0 to 252.8	32.9	478	1
Pronghorn Crucial Winter/Yearlong Habitat	85.7 to 90.1 134.7 to 152.6 192.8 to 201.6 220.5 to 223.5 242.0 to 259.0	51.1	741	22
Elk Crucial Winter Habitat	242.0 to 249.5	7.5	90	0

[1] Based on the pipeline construction ROW, aboveground facilities, powerline easements, and additional workspace areas, but does not include pipe contractor yards or temporary access roads.

[2] Permanent aboveground facilities include: compressor stations, pigging facilities, meter stations, mainline valves, and permanent access roads.

Elk inhabit a variety of habitats along the project route including grassland, shrubland, coniferous forests, aspen, and, to a lesser extent, agriculture and pastureland. Approximately 29.4 miles of critical winter range for elk would be crossed by the project ROW in Rio Blanco and Moffat Counties in western Colorado. Two critical winter range areas of particular importance along the project route were identified by the CDOW. The most important of these areas occurs from the north end of the Deception Creek Canyon in Moffat County through the Spring Creek Canyon, north of the Yampa River. A considerable portion of this critical area is located on the Bitter Brush State Wildlife Area (SWA). The second area of concern is located in the vicinity of White River Dome/Indian Valley located north of the White River in Rio Blanco County. In addition to these areas specifically identified by the CDOW, approximately 7.5 miles of crucial winter range would be crossed by the project ROW in Carbon and Albany Counties in southern Wyoming. In Colorado, critical winter range also encompasses some severe winter ranges as well as some winter concentration areas.

Mule deer occur throughout the majority of the project region, inhabiting virtually all vegetation types, but reach the greatest densities in shrublands on rough, broken terrain, which provides abundant browse and cover habitat. Critical winter ranges for mule deer in Colorado are the same as described above for elk. In addition, approximately 32.9 miles of crucial winter/yearlong range would be crossed by the project route in Sweetwater, Carbon, and Albany Counties in southern Wyoming.

Pronghorn are generally found in prairie grassland and semi-desert shrubland habitats on flat to rolling terrain with good visibility. They are most abundant in short- or mid-grass prairies and are least common in xeric habitats. Critical winter ranges for pronghorn in Colorado are the same as described above for elk and mule deer, including two important winter ranges, as described above for elk. In addition, approximately 51.1 miles of crucial winter/yearlong range would be crossed by the project route in Sweetwater, Carbon, and Albany Counties in southern Wyoming.

In Colorado, the proposed pipeline route would cross two SWAs, the Piceance SWA and Bitter Brush SWA, owned by the CDOW. The Piceance SWA would be crossed by the pipeline ROW at several locations along Piceance Creek, from the vicinity of Horse Draw north to the White River. The Bitter Brush SWA is located along Deception Creek, south of the Yampa River. The Bitter Brush SWA is one of the big game critical winter range areas described above. In Wyoming, the proposed pipeline route would cross WGFD property on the Red Rim-Daley Wildlife Habitat Management Area (WHMA) and potentially the Wick WHMA in Carbon County. These state lands are discussed further in section 3.7.1.

Construction impacts to big game species (elk, mule deer, pronghorn) would include the incremental loss of potential forage (native vegetation and previously disturbed vegetation) and would result in an incremental increase in habitat fragmentation within the proposed surface disturbance areas. However, as noted above, these incremental losses of vegetation would represent only a small percent of the overall available habitat within the broader project region. The loss of native vegetation would be long term (greater than 5 years and, in some cases, more than 20 years). In the interim, herbaceous species may become established within 3 to 5 years, depending on future weather conditions and grazing management practices that would affect reclamation success in the project region. In most instances, suitable habitat adjacent to the disturbed areas would be available for wildlife species until grasses and woody vegetation were reestablished within the disturbance areas.

Indirect impacts would result from increased noise levels and human presence during surface disturbance activities. Big game animals (especially pronghorn and mule deer) likely would decrease their use within 0.5 mile of surface disturbance activities (Ward et al. 1980; Ward 1976). This displacement would be short-term and animals would return to the disturbance area following construction activities. However, assuming the adjacent habitats are at or near carrying capacity, and given the current drought conditions in the project region, displacement of wildlife species (e.g., big game) as a result of construction could cause some unquantifiable reduction in wildlife populations.

In Colorado, construction activities also would result in the long-term incremental reduction of approximately 64 acres of habitat in the Piceance SWA and approximately 41 acres of habitat in the Bitter Brush SWA in Rio Blanco and Moffat Counties, respectively. A portion of the Bitter Brush SWA that would be crossed by the proposed ROW includes elk, mule deer, and pronghorn winter habitat as discussed above. In Wyoming, the proposed pipeline route would cross approximately 25 acres of habitat on the Red Rim-Daley WHMA and approximately 76 acres of habitat on the Wick WHMA in Carbon County. However, on a regional basis, these acreages of disturbance would represent a small percentage (less than 1 percent) of the overall available habitat within these areas.

In order to reduce potential impacts to big game species, Entrega has committed to avoiding construction and non-emergency maintenance activities in designated crucial winter/yearlong big game ranges between November 15 and April 30 in Wyoming, and in designated critical winter big game range areas between December 1 and April 30 in Colorado, unless otherwise permitted by the BLM. In order to further minimize impacts to big game species during winter, **we recommend that:**

- **Entrega avoid WHMA lands during non-emergency maintenance activities from November 15 through April 30; and**

- **in addition to the winter constraint periods, Entrega avoid constructon in the CDOW Bitter Brush SWA from October 1 through December 31 to avoid heavy hunter concentration areas.**

Operational activities occurring from permanent aboveground facilities (i.e., compressor stations, pigging facilities, meter stations, mainline valves, and permanent access roads) would result in the permanent loss of less than 1 acre of critical winter habitat for elk, mule deer, and pronghorn in Colorado. In Wyoming, operational activities occurring from permanent aboveground facilities would result in the permanent loss of about 1 acre of mule deer crucial winter/yearlong habitat and approximately 22 acres of pronghorn crucial winter/yearlong habitat. No permanent aboveground facilities would be constructed within elk crucial winter habitat in Wyoming.

Small Game Species

Small game species that occur within the project region include upland game birds, waterfowl, and furbearers and other various small mammals. Furbearers include beaver, muskrat, mink, badger, bobcat, coyote, red fox, and swift fox. Small game species include greater sage grouse, mourning dove, white-tailed jackrabbit, desert cottontail, Nuttall's cottontail, and a number of migratory waterfowl. The greater sage grouse is considered the most sensitive small game species along the project route and is discussed further in section 3.6.

Potential impacts on small game from the proposed project would include the incremental loss of habitat and increased habitat fragmentation until reclamation has been completed and native vegetation is reestablished. Potential direct impacts to small game species would include nest or burrow abandonment or loss of eggs or young. Indirect impacts could include the temporary displacement of small game from the disturbance areas as a result of increased noise and human presence. Displacement of small game animals from disturbance areas would be short-term and animals would return to the disturbance areas following construction activities.

Nongame Species

A diverse number of nongame species (e.g., small mammals, amphibians, and reptiles) occupy a variety of trophic levels and habitat types along the proposed pipeline ROW. Common wildlife species include small mammals such as bats, voles, squirrels, gophers, prairie dogs, rabbits, woodrats, and mice. These small mammals provide a substantial prey base for the area's predators including larger mammals (coyote, badger, bobcat); raptors (eagles, buteos, accipiters, owls); and reptiles.

In order to minimize potential impacts to smaller, less mobile species, Entrega has committed to capping uncovered pipe that has been placed in the trench at the end of each workday to prevent animals from entering the pipe. In addition, EIs or biological monitors would remove animals from open trenches during construction.

Raptors and Other Migratory Birds

Migratory birds are protected under the Migratory Bird Treaty Act (MBTA) (16 USC 703-711) and EO 13186 (66 Federal Register [FR] 3853). The MBTA serves to protect migratory birds from deleterious impacts. EO 13186 was enacted to, among other things, ensure that environmental analyses of federal actions evaluate the impacts of actions and agency plans on migratory birds.

Other elements of EO 13186 state that the federal agency should restore and enhance the habitat for migratory birds and abate the detrimental alteration of the environment from pollution. EO 13186 also states that emphasis should be placed on species of concern, priority habitats, and key risk factors. General impacts to migratory birds and Entrega's proposed measures to minimize such impacts are discussed below. Federally listed and other sensitive bird species are discussed in section 3.6.2.

This EIS discusses several plans (e.g., Entrega's Procedures, CM&R Plan, SPCC Plan, Riparian Woodland Plan, and BLM Conservation Measure Plan) that would reduce the extent and duration of impacts on migratory bird habitat, actively and naturally allow a great majority of the construction ROW to return to pre-construction condition, and avoid or limit the potential effects from spills or environmental contamination.

Migratory birds are considered integral to natural communities and act as environmental indicators based on their sensitivity to environmental changes caused by human activities. Some of the more visible bird species that occur within the project region are lark bunting, brewer's sparrow, and chipping sparrow.

Representative raptor species that occur as residents or migrants within the project region include eagles (bald and golden eagles), buteos (red-tailed hawk, Swainson's hawk, ferruginous hawk), falcons (peregrine falcon, prairie falcon, American kestrel), accipiters (northern goshawk, Cooper's hawk, sharp-shinned hawk), owls (great-horned owl, burrowing owl, long-eared owl, short-eared owl), the northern harrier, and the turkey vulture. Based on historical raptor data obtained from the CDOW, WGFD, and Wyoming BLM-Rawlins FO, a total of 54 historic nest sites have been documented within 1 mile of the ROW. These 54 historic nest sites were as follows: 2 bald eagles, 16 ferruginous hawk, 10 golden eagle, 2 red-tailed hawk, 1 rough-legged hawk, 1 Swainson's hawk, 2 northern harrier, 6 prairie falcon, 4 American kestrel, 2 great-horned owl, 5 burrowing owl, and 3 short eared owl. We note that historic raptor information for Colorado was limited to

data obtained from the CDOW, as no historic raptor data were received from the Colorado BLM FOs. As a result, only one historic raptor nest site (bald eagle) was documented along the project route in Colorado. It is likely that additional historic raptor nest sites occur along the project route in Colorado. The BLM has recently indicated that approximately 186 historic raptor nest sites occur with 1 mile from the ROW in Wyoming. **We recommend that Entrega coordinate with the BLM to obtain applicable historic raptor nest locations, prior to conducting 2005 raptor surveys.**

In order to assess current nest activity, Entrega conducted preliminary aerial breeding raptor surveys along the proposed ROW using inventory procedures. The aerial raptor surveys were conducted between April 23 and May 4, 2004, to identify occupied territories or active nest sites located within 1 mile of the outside edge of the construction ROW. Aerial surveys focused on cliff nesters (e.g., golden eagle, falcon species), species that commonly build nests on deciduous trees or on promontory points (e.g., red-tailed hawk, Swainson's hawk, ferruginous hawk, great-horned owl), and ground nesters (e.g., northern harrier). The preliminary raptor surveys did not concentrate on cavity nesters (e.g., American kestrel), subterranean nesters (e.g., burrowing owl), or most conifer nesters (e.g., accipiters), based on visibility limitations from the helicopter.

Based on the results of the year 2004 breeding raptor surveys, a total of 40 active nest sites (Colorado-10, Wyoming-30) were documented within 1 mile of the ROW. The active nest sites were occupied by red-tailed hawk (14), golden eagle (11), ferruginous hawk (9), great-horned owl (3), bald eagle (2), and one raptor nest was occupied by a common raven.

Because raptors may change nesting locations from year to year, Entrega has committed to completing pre-construction raptor surveys in spring 2005, in accordance with established raptor survey protocol as identified in the "Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances" (FWS 2002a) and Entrega's BLM Survey Plan. These surveys would enable Entrega to identify specific areas where construction may affect active nests (and, in the case of burrowing owls, cause direct impacts on nesting habitat) and where buffer zones may be required. Entrega would confirm the appropriate buffer zone radius and seasonal restriction through consultation with the FWS, BLM, WGFD, and CDOW, as applicable, and would implement appropriate protection measures such as seasonal constraints and establishment of buffer zones, as discussed in Entrega's BLM Conservation Measure Plan. Survey results and buffer zone information would be filed with the FERC as a part of Entrega's construction Implementation Plan.

Northern harriers would likely not be detected by aerial surveys. This species prefers areas of tall, dense herbaceous vegetation. Surveyors would note presence when conducting wetland or other surveys in suitable habitat. Likewise, burrowing owls would not be detected by aerial surveys. Burrowing owls inhabit open, dry areas with low-growing vegetation such as grasslands and prairie dog towns. Surveyors would note Northern harrier and burrowing owl presence when conducting habitat surveys and when surveying for mountain plover, prairie dogs, and black-footed ferret, as indicated in Entrega's BLM Survey Plan.

Entrega's proposed construction schedule would overlap the breeding season for many migratory bird species. Thus, the EPP could cause direct and indirect effects to raptors and other migratory birds. Indirect effects are associated with increased human presence and noise from construction activity near enough to

active nests to disturb the birds. These impacts could include interruption of foraging, roosting, and nesting patterns and behaviors. We do not believe this type of impact would be significant for non-nesting birds, as individuals temporarily relocating to avoid construction activity is an impact of limited duration. However, disturbance of nesting birds could cause nest abandonment or otherwise reduce the productivity of a nest for that breeding season. The specific impact for a particular nest would depend on a number of variables including the distance of the nest site from construction activity, the species' relative sensitivity to disturbance, breeding phenology, and possible topographic shielding.

In order to minimize this type of impact on raptors, the BLM usually recommends seasonal and distance restrictions for raptor nests. The typical seasonal restriction is from February 1 to July 31, although the period may be adjusted based on site specific factors (e.g., distance, topography, and natural barriers; pre-existing conditions such as highways; and the specific activity of a given nest). The avoidance zones are 0.25 mile for falcons and owls, 0.5 mile for most hawks and eagles, and 1.0 mile for ferruginous hawks. Avoidance zones may be adjusted based on local state and federal raptor protection guidelines and site-specific factors discussed above. Certain sensitive non-raptor bird species also have seasonal and spatial considerations (e.g., mountain plover and sage grouse—see section 3.6).

The removal of suitable foraging and nesting habitat also can be considered a type of direct impact. This type of impact cannot be avoided altogether during construction; however, Entrega has proposed measures that would minimize it to the extent practicable. For example, Entrega has committed to reducing the construction ROW width in riparian woodlands (favorable habitat for many bird species) and would restore upland vegetation habitats (e.g., grassland, shrub-scrub, woodlands) in the construction ROW to preconstruction conditions, as discussed in Entrega's CM&R Plan.

Other direct impacts to migratory birds include construction-related destruction of nests and mortality of individuals. We believe these types of impacts would be small for tree-dwelling birds, given the minimal amount of woodland that would be affected by the project (approximately 211 acres, or 4 percent of the total project disturbance) and the raptor protections discussed above. The greatest chance for "take" (i.e., the unintended death, harm, or harassment) of a nest is for ground-nesting and shrub-nesting species.

We note that EO 13186 requires federal agencies to avoid or minimize negative impact to migratory bird populations. The executive order also requires the federal agency to identify where unintentional "take" is likely to have a measurable negative effect on migratory bird populations. Effects to non-sensitive ground-nesting birds (which do not have significantly reduced populations) would not result in long-term or significant population-level effects, given the stability of local populations and the abundance of available habitat outside of the proposed ROW, and the linear nature of the project over a large geographic range (see also our discussion on the burrowing owl, an underground-dwelling raptor, in section 3.6.2). We conclude that the EPP would not result in population-level impacts to migratory bird species.

Three new electrical powerline segments would provide electrical power to the Meeker and Wamsutter Compressor Stations and the Cheyenne Hub (see **table 2.3-1**). These electrical powerline segments would incrementally increase the collision potential for migrating and foraging bird species (e.g., raptors and migratory birds [APLIC 1994]). However, collision potential typically is dependent on variables such as the line location in relation to high use habitat areas (e.g., nesting, foraging, and roosting), line orientation to

flight patterns and movement corridors, species composition, visibility, and line design. In addition, these new powerline segments (one 25-kV powerline, one 34.5-kV powerline, and one 7.2-kV powerline could pose an electrocution hazard for raptor species attempting to perch on the structure. Configurations less than 1 kV or greater than 69 kV typically do not present an electrocution potential, based on conductor placement and orientation (APLIC 1996). To minimize potential collision and electrocution impacts to migrating and foraging bird species, the following protection measures would be included in the BLM ROD and ROW Grant to the service provider for BLM lands:

- The electrical service providers will incorporate standard, safe designs as outlined in Suggested Practice for Raptor Protection on Power Lines (APLIC 1996) into the design of electrical distribution lines in areas of identified avian concern to prevent electrocution of raptor species attempting to perch on the power poles and lines. These measures would include, but would not be limited to, a 60-inch separation between conductors and/or grounded hardware and recommended use of insulating materials and other applicable measures depending on line configuration (APLIC 1996).

- The electrical service providers will incorporate standard raptor-proofing designs as outlined in Mitigating Bird Collision with Power Lines (APLIC 1994) into the design of the electrical distribution lines to prevent collision to foraging and migrating raptors within the project area, as applicable.

- The electrical service provider will use adequate raptor proofing designs to minimize the potential use of power poles by foraging raptors that cross sage grouse habitat and prairie dog colonies.

3.6 Special Status Species

Special status species are those species for which state or federal agencies afford an additional level of protection by law, regulation, or policy. Included in this category are federally listed and federally proposed species that are protected under the ESA, as amended, or are considered as candidates for such listing by the FWS, and those species that are state-listed as threatened or endangered. For this EIS, special status species also include those species that have been designated by the BLM as sensitive.

Entrega, acting as the FERC's non-federal representative for the purpose of complying with Section 7(a)(2) of the ESA, initiated informal consultation with the FWS on October 7, 2003, regarding federally listed species with the potential to be affected by the proposed project. Initial consultations concluded that the Wyoming FO of the FWS would serve as the lead office for project consultations.

In accordance with the ESA, the lead agency in coordination with the FWS must ensure that any action authorized, funded, or carried out does not jeopardize the existence of a federally listed threatened or endangered species, or result in the adverse modification of the designated critical habitat of a federally listed species. We are requesting that the FWS consider this EIS as our BA for the proposed project. Pending additional surveys and related information from Entrega, we may have to enter formal consultation for one or more species in order to fulfill our Section 7 obligations. Our recommendations (detailed below, as applicable) would ensure that Entrega would not be authorized to begin project work until any necessary comments, concurrence, or formal consultation is completed between the FERC and the FWS regarding the proposed action.

In addition, as stated in Special Status Species Management Policy 6840 (Policy 6840) (Rel. 6-121), it is BLM policy "to conserve listed species and the ecosystems on which they depend, and to ensure that actions requiring authorization or approval by the BLM are consistent with the conservation needs of special status species and do not contribute to the need to list any special status species, either under the provisions of the ESA, or other provisions" identified in the Policy 6840.

The construction impact analysis for special status plant and wildlife species focused on those species that were identified as potentially occurring within the project area. Special status plant and animal species considered for the proposed project are presented in appendix K.

Applicant-committed protection measures that have been developed for the project to prevent or minimize direct impacts on special status species include survey plans (Entrega Pipeline Special Status Species Survey Plan and BLM Survey Plan) and corresponding conservation measure plans (Entrega Pipeline Conservation Measure Plan and BLM Conservation Measure Plan).

The Entrega Pipeline Special Status Survey Plan includes survey protocols for a number of special status species including federally listed and proposed species, federal candidate species, and other species of concern identified by the FWS (e.g., sage grouse, mountain plover, and raptors). This Survey Plan was approved by the FWS on June 23, 2003. The Entrega Conservation Measure Plan includes measures that would be implemented if federally listed species or species of concern were identified along the proposed pipeline route during project-specific surveys. In coordination within the FWS, the conservation measure

plan includes the appropriate measures that would prevent or minimize potential impacts to protected species such that the proposed project would not be likely to adversely affect these species.

The BLM Survey Plan includes survey protocols for BLM sensitive species that were identified for the project. This survey plan was approved by the Rawlins, Little Snake, and White River BLM FOs. The BLM Conservation Measure Plan includes measures that would be implemented if BLM sensitive species were identified along the proposed pipeline route during project-specific surveys. In coordination with the BLM, the conservation measure plan includes measures that would prevent or minimize impacts on sensitive species, such that the proposed project would not be likely to result in a loss of viability, nor cause a trend toward federal listing or a loss of species viability rangewide.

3.6.1 Plant Species

A total of 17 sensitive plant species were originally identified as potentially occurring within the project area. These species, their associated habitats, and their potential for occurrence along the project route are summarized in appendix K. Occurrence potential along the project route was evaluated for each species based on its habitat requirements and/or known distribution. Based on these evaluations, six plant species (Park rockcress, ephedra buckwheat, Utah genetian, narrow-leaf evening primrose, Rollins cryptanth, and western prairie-fringed orchid) were eliminated from detailed analysis. The remaining 11 plant species are analyzed in greater detail.

Potential impacts on sensitive plant species from surface-disturbing activities could include the loss of individuals as a result of crushing from construction vehicles and equipment. Construction-related impacts also could result in the incremental long-term disturbance of habitat for these species along portions of the project route and at ancillary facilities (i.e., compressor stations, meter stations, mainline valves, temporary use areas, and pipe and contractor yards). Because surface disturbance within the project area would be localized and distributed over a large geographic area, population-level impacts on sensitive species are not anticipated. Nevertheless, construction activities could potentially reduce local populations of special status plant species within the project area. Species-specific impact summaries, Entrega's committed conservation measures, additional mitigation measures, and our recommendations and determination statements (as applicable) are presented below.

Federally Listed Plants

Colorado Butterfly Plant, Dudley Bluffs Bladderpod, Blowout Penstemon, Dudley Bluffs Twinpod, and Ute Ladies'-tresses

Potential impacts on these federally listed plant species could include the loss of individuals or local populations as a result of crushing from construction activities. Impacts also would result from the incremental long-term disturbance of habitat until reclamation is completed and native vegetation has become reestablished. Indirect impacts could include invasion of the habitat by invasive or noxious plant species.

Entrega's 2004 surveys identified Dudley Bluffs twinpod between MPs 0 to 1; however the plants were outside of the proposed construction corridor. Entrega did not identify any other federally listed plant species in the project area. However, potentially suitable habitat was identified within the project ROW. Thus, Entrega would conduct preconstruction field surveys in accordance with its Special Status Species Survey Plan. Prior to the start of construction, **we recommend that Entrega conduct preconstruction field surveys for federally listed plant species (i.e., the Colorado butterfly plant, Dudley Bluffs bladderpod, blowout penstemon, Dudley Bluffs twinpod, and Ute ladies'-tresses) in areas subject to project-related disturbance in accordance with its Special Status Species Survey Plan. Prior to construction, Entrega should file the following information with the Secretary:**

- **name(s) and qualifications of the person(s) conducting the survey;**
- **method(s) used to conduct the survey;**
- **date(s) of the survey;**
- **area surveyed (include the MPs surveyed); and**
- **results of the surveys, to indicate species presence or absence.**

If plants are identified along the edge of the ROW, Entrega would place exclusion fencing around the plants so they would be avoided by construction activities. If plants are located within the ROW, Entrega would evaluate the potential for a route realignment or change to the ROW configuration (e.g., reducing the width of the ROW) to avoid the population. In order for us to complete our Section 7 obligations, if a federally listed plant species is found during the preconstruction surveys, **Entrega must notify the Commission staff and the FWS before commencing any project construction activity. This notification shall contain Entrega's evaluation of whether or not the plant(s) could be avoided by reroute or by the use of a horizontal bore. Further, Entrega shall not begin construction activities until:**

a. **the staff receives comments from the FWS regarding the proposed action;**

b. **the staff completes formal consultation with the FWS, if required; and**

c. **Entrega has received written notification from the Director of OEP that construction or use of mitigation may begin.**

Determination Statement

Effect on Critical Habitat: No effect. No critical habitat for these plants has been designated within the project area.

Effect on the Species: We conclude that the EPP *may affect, but is not likely to adversely affect* the Colorado butterfly plant, Dudley Bluffs bladderpod, blowout penstemon, Dudley Bluffs twinpod, and Ute

ladies'-tresses. Our determination is based on 1) negative results for the 2004 surveys (with the exception of the Dudley Bluffs twinpod, which was outside of the project corridor), 2) our analysis of Entrega's proposed action and mitigation plans (e.g., Entrega's Plan and Procedures, POD, Weed Management Plan), 3) Entrega's Special Status Species Survey plan and Conservation Measure Plan, and 4) our recommendations.

BLM Sensitive Plant Species

Debris Milkvetch, Nelson Milkvetch, Narrow-stem Gilia, Piceance Bladderpod, Gibben's Beardtongue, and Laramie False Sagebrush

Potential impacts to these BLM sensitive plant species could include the loss of individuals or local populations as a result of crushing from construction activities. Impacts also would result from the incremental long-term disturbance of habitat until reclamation is completed and native vegetation has become reestablished. Indirect impacts may include invasion of the habitat by invasive or noxious plant species.

Entrega's 2004 surveys identified Gibben's beardtongue between MPs 97 to 99; however, the plants were outside of the proposed construction corridor.

If suitable habitat for these sensitive plant species is identified within the project ROW on BLM lands, a field survey would be conducted in accordance with the BLM Survey Plan. If plants are found immediately along the edge of the ROW, exclusion fencing would be placed around the plants so they are avoided by construction activities. If plants are located within the ROW, Entrega would evaluate the potential to change the ROW configuration to avoid plants located on the edge of the ROW. If a reconfiguration of the ROW is not possible and it is determined that a plant population would be impacted from construction activities, the following protection measures would be included in the BLM ROD and ROW Grant for BLM lands:

- Entrega would coordinate with the BLM to determine if additional mitigation measures or other appropriate actions would be required to reduce potential impacts to the population. Entrega would not be authorized to proceed with construction until any BLM required mitigation had been implemented in accordance with the BLM ROW Grant.

- The Field Manager may grant an exception if an on the ground plant inventory is conducted and an analysis indicates that the nature or conduct of the action as proposed would not directly or indirectly contribute to the need to list or perpetuate listings under the ESA or the BLM Special Status Species policy provisions. An inventory would determine, to the extent practical, the occurrence, distribution, population dynamics and habitat condition and significance on BLM lands with respect to maintaining or restoring those species.

Entrega would monitor and implement the conservation plan to ensure actions are consistent with recovery needs and the topsoil shall be segregated for ditchline and spoil storage areas containing sensitive plants to ensure adequate topsoil is segregated and would replace the topsoil to ensure the seed bank is returned to the affected area.

Implementation of Entrega's Weed Management Plan would minimize the introduction and/or spread of invasive plant species. We believe that the EPP may impact individuals but is not likely to cause a trend to federal listing or loss of viability for these plant species.

3.6.2 Terrestrial Animal Species

A total of 28 sensitive terrestrial species (mammals, birds, reptiles, amphibians) were originally identified as potentially occurring within the project area. These species, their associated habitats, and their potential for occurrence along the project route are summarized in appendix K. Occurrence potential along the project route was evaluated for each species based on its habitat requirements and/or known distribution. Based on these evaluations, seven species (northern goshawk, Eskimo curlew, interior least tern, whooping crane, piping plover, yellow-billed cuckoo, and western boreal toad) were eliminated from detailed analysis. The EPP *would not affect* these seven species. Species-specific impact summaries, applicant-committed conservation measures, mitigation measures, and determination statements (if applicable) are presented below.

Potential impacts to sensitive species from surface disturbance activities would include the loss (short-term, long-term, or permanent), alteration, or fragmentation of potential breeding and/or foraging habitats. Potential impacts also could result in mortalities of less mobile or burrowing species as a result of crushing by vehicles and equipment, and the potential abandonment of a nest site or territory and the loss of eggs or young. Other impacts could include short-term displacement of some of the more mobile species from the disturbance areas as a result of increased noise and human presence.

Federally Listed Animal Species

Black-footed Ferret

The federally endangered black-footed ferret was once distributed throughout the high plains of the Rocky Mountains and western Great Plains regions, but is now thought to be the rarest mammal in the U.S. In general, ferrets are secretive, primarily nocturnal, and rarely observed.

The black-footed ferret was considered extirpated from the U.S. until a small population was discovered in Wyoming in 1981. A captive breeding and re-introduction program, guided by the FWS, established some experimental/nonessential populations in Wyoming, Montana, South Dakota, and Arizona; however, ferret reintroduction efforts in Wyoming were suspended in 1995 because of disease. No reintroduced populations were established in the proposed project area; however, the project location is within the historic range of the ferret. There are no recent sight records although, according to the Wyoming Natural Diversity Database, a ferret skull was found in Sweetwater County in 2000.

Black-footed ferrets are found in association with prairie dog colonies in grasslands and shrublands, and are highly dependent on prairie dog towns for both food and shelter. All active prairie dog towns or complexes of towns large enough to support ferrets are considered to be potential habitat.

The FWS has block-cleared all prairie dog towns in the Colorado portion of the project area. In Wyoming, all black-tailed prairie dog towns in the project area have been block cleared. Therefore, no surveys are necessary for these locations. Surveys of white-tailed prairie dog towns are required if certain size and density requirements are met. Specifically, a prairie dog town is defined as a group of prairie dog burrows for which density meets or exceeds eight burrows per acre. According to FWS protocol, surveys for black-footed ferret are required for prairie dog complexes larger than 200 acres. Towns less than 4.3 miles apart are considered part of the same complex for survey threshold purposes. When assessing burrow density, the burrows need not be active to be counted, but must be recognizable and intact (i.e., not caved in or filled with debris).

Entrega reports that nine white-tailed prairie dog towns of sufficient size and density to require black-footed ferret surveys are present Wyoming between MPs 86 to 152 totaling approximately 2,000 acres. Potential impacts on ferrets could result from abandonment of underground nursery dens and the potential loss of adults and young from the compaction of prairie dog burrows during project construction, if present. Indirect impacts could occur from the increase in noise levels and other disturbances related to construction and human presence.

Entrega conducted black-footed ferret surveys in these prairie dog towns in 2004 in accordance with the survey plan. No black-footed ferret observations or sign were identified during the survey period. As a result, no direct impacts to the black-footed ferret would be anticipated from the proposed project.

Determination Statement

Effect on Critical Habitat: No effect. No critical habitat has been designated for this species.

Effect on the Species: We conclude that the EPP *may affect, but is not likely to adversely affect* the black-footed ferret. This determination is based on the disturbance of prairie dog towns, but the low potential for ferrets to occur within the project area and negative survey results for this species.

Preble's Meadow Jumping Mouse

Favorable Preble's meadow jumping mouse habitat consists of areas where woody riparian vegetation and dense herbaceous understory is present along perennial streams. Preble's meadow jumping mice are known to stay close to stream edges in dense vegetation but will venture into nearby upland herbaceous and/or grassy habitat to forage and possibly winter. Potentially suitable habitat for the Preble's meadow jumping mouse was identified at nine areas along the project ROW between MPs 289.8 and 320.2. Habitat also was located along two Class A access roads for the project.

Potential direct impacts on the Preble's meadow jumping mouse during construction could include displacement, injury, or death of individuals at stream crossings during clearing, trenching, while the trench is open prior to pipe lowering-in and backfilling, and during general vehicle movement along the ROW. Other impacts could result from the temporary loss of habitat until reclamation is complete, soil compaction (which may limit revegetation success), and the permanent loss of habitat as a result of vegetation

maintenance within the pipeline corridor. Indirect impacts on the Preble's meadow jumping mouse could occur from the increase in noise levels and other disturbances related to construction and human presence.

Entrega would evaluate the potential for a route realignment up- or downstream or a change to the ROW configuration (e.g., using the opposite side of the ROW to operate vehicle traffic) to avoid Preble's meadow jumping mouse habitat. If Entrega determines that a reroute or configuration change is not feasible, it would conduct live trapping field surveys in accordance with FWS protocols.

Entrega has developed a set of conservation and mitigation measures it would use in the event the presence of Preble's meadow jumping mouse was confirmed at a particular location. These are:

1. The width of the ROW would be reduced, as practical.

2. No equipment would be parked closer than 100 meters from the stream crossing.

3. A biologist would clear the area of mice prior to commencing construction of the crossing. To do this, the biologist would search the area and trap it for one night prior to construction initiation using live traps. Any Preble's mouse captured would be moved upstream or downstream at least 100 feet away from the edge of the ROW.

4. If the crossing occurs during the breeding season (in June or July), captured adults would be released at the trap site and followed to attempt to determine if they have young in a nest. If a nest is located within the ROW, a decision would be made to move the ROW and avoid the nest or delay the crossing until late July when the young should be mobile and able to be trapped and moved from the immediate area.

5. If the route is moved to avoid an identified nest but still occurs in suitable habitat, surveys would be conducted as necessary and the above measures would be implemented.

6. Whenever a piece of equipment needs to cross the area, the biologist would walk in front of the equipment to clear the area. Each subsequent piece of equipment would have the biologist walk in front of it to make sure no mice have come back into the ROW.

Construction through areas of suitable habitat would be conducted as quickly as is practical.

Following construction, areas of suitable habitat would be restored by broadcast seeding the banks with a seed mix that includes native species and is acceptable to the landowner, local NRCS office, or other applicable agencies. In addition, Entrega would replace plugs of willow and/or preexisting shrub species from the riparian area with one plant (willow sprig or bare root stock) every square foot. If it is possible for cattle to graze in replanted riparian areas and the landowner provides consent, Entrega would fence the area to exclude grazing until vegetation is reestablished.

To prevent the permanent loss of Preble's meadow jumping mouse habitat, Entrega would modify its plan for long-term maintenance of the permanent ROW within suitable habitat. Generally, Entrega's Procedures

allow for a 10-foot-wide corridor centered over the pipeline to be maintained in an herbaceous state to facilitate periodic pipeline corrosion/leak surveys. In addition, trees greater than 15 feet in height within 15 feet of the pipeline are typically removed from the permanent ROW. In modifying its plan for long-term maintenance, Entrega would allow for the revegetation of native shrub species in addition to herbaceous species within the 10-foot-wide corridor, and would only remove trees over 15 feet tall as necessary. **We further recommend that Entrega shall not begin construction activities until:**

a. **Entrega files with the Secretary for review and written approval by the Director of OEP its evaluation of possible ROW re-alignments to avoid Preble's meadow jumping mouse habitat;**

b. **the staff receives the Preble's meadow jumping mouse survey report as well as comments from the FWS on the survey report and the proposed action's effects on the Preble's meadow jumping mouse;**

c. **the staff completes formal consultation with the FWS, if required; and**

d. **Entrega has received written notification from the Director of OEP that construction or use of mitigation may begin.**

Determination Statement

Effect on Critical Habitat: No effect. No critical habitat has been designated within the project area.

Effect on the Species: We conclude that the EPP *may affect, but is not likely to adversely affect* the Preble's meadow jumping mouse. This determination is based on Entrega's commitment to either 1) avoiding Preble's meadow jumping mouse habitat or conducting surveys to determine the presence of the species; 2) in the event surveys are positive, implementing conservation measures (including those in its Riparian Woodland Plan); and 3) our recommendations here and in section 3.4.1.

Bald Eagle

The bald eagle is currently federally listed as threatened. Historically, populations of bald eagles were drastically reduced principally due to low productivity as a result of the bioaccumulation of pesticides. Since the banning of organochlorine pesticides such as DDT, bald eagle numbers have been increasing, leading to the species being proposed for federal delisting on July 4, 1999, as recovered. The bald eagle will, however, remain protected under the ESA until delisting is finalized. Bald eagles also are protected under the MBTA and the Bald and Golden Eagle Protection Act.

Because the bald eagle's diet consists mostly of fish, individuals tend to be found associated with bodies of water such as lakes, rivers, and reservoirs. Eagles also may forage opportunistically, especially in winter, feeding on waterfowl, dead fish, jackrabbits, and big game carrion.

Bald eagles may be present in the project area, where they typically roost communally during the winter and nest during the summer. Winter roosts in the project area may be occupied from October 15 to April 1.

Typically, bald eagles will select roost sites such as large, stoutly limbed trees, snags, broken-topped trees, or rocks or cliff facings near water that provide easy access to hunting or feeding areas. Eagles tend to use the same roosts each year.

The nesting season is from February 15 to August 15. Migrant (non-nesting) individuals also could be present during the summer in appropriate habitat. Nests are usually large and conspicuous stick assemblages, and are built in habitat similar to that used for roosting. In Colorado and Wyoming, nest tree habitat can include old-growth ponderosa pine as well as narrow strips of riparian vegetation surrounded by rangeland.

Potential direct impacts on bald eagles during construction could include displacement of individuals to adjacent habitats or damage to occupied and/or unoccupied nests. If construction were to occur during the nesting season, impacts also could include abandonment of eggs or nestlings, injury to nestlings, destruction of eggs, or mortality of nestlings. Additionally, construction could potentially affect the availability of the bald eagles' primary food sources, thereby indirectly affecting individuals.

Two bald eagle nest sites were identified during Entrega's 2004 raptor surveys. Entrega has committed to evaluating these sites during 2005 to determine nesting activity. If a nest is active, Entrega would adhere to a 1-mile spatial buffer for construction between February 15 and August 15. Buffer zones can be adjusted upon consultation with the FWS on a site-specific basis depending on topography and line-of-sight factors, the specific project activity (e.g., active construction vs. a one-time pass-through), other features in the area (e.g., a highway between the nest site and the construction zone), and the status of the nest (e.g., downy eaglets vs. fully fledged young).

Entrega would have a monitor present to evaluate these and other factors to determine whether or not to request a buffer zone variance from the FWS. Entrega further states that if a previously unidentified active bald eagle nest were discovered during construction, Entrega would stop work in the area and contact the FWS. **We further recommend that if Entrega encounters a previously unidentified active bald eagle nest within 1 mile of the construction ROW, Entrega should concurrently notify the Commission staff and the FWS, and file such information with the Secretary. Entrega should not continue with construction until the staff has reviewed the information, completed any necessary consultation with the FWS, and the Director of OEP notifies Entrega in writing that construction may proceed or use of mitigation may begin.**

Impact on roosting bald eagles generally occurs in either of two ways: 1) construction activity directly disturbs roosting eagles, or 2) construction results in the clearing of potential roost trees in suitable habitat.

Non-nesting bald eagles may be temporarily displaced during construction, but this is not usually considered a significant impact. Individual eagles could find other suitable roosts in the general area until construction activity has passed. However, the FWS often recommends measures to minimize the amount and extent of such displacement. Examples of such measures include a 0.5-mile buffer zone around roosting eagles, timing construction to certain portions of the day, or having a waiting interval to see if eagles will leave the area on their own accord. (Typically, if construction is ongoing and an eagle enters the project activity area, construction would not have to stop.) In order to minimize impacts to roosting bald eagles, **we recommend**

that Entrega conduct surveys for roosting eagles within potential winter roost areas if construction occurs between November 15 and April 15. In the event that occupied bald eagle winter roost sites are identified within 0.5 mile of construction areas, Entrega should coordinate with the FWS to determine if protection measures (e.g., timing restrictions and/or buffer areas) would be required. Entrega should report the results of the coordination in a filing with the Secretary, and should not begin construction until the staff has reviewed the information, completed any necessary consultations with the FWS, and the Director of OEP notifies Entrega in writing that construction or use of mitigation may begin

Entrega's Riparian Woodland Plan commits to reducing the construction ROW width to 75 feet in riparian woodlands and to avoiding the removal of trees in these areas to the maximum extent practical. Entrega further states that it would consider measures to avoid or minimize impact on roost trees if such trees may be affected during construction. However, we believe there should be a stronger commitment to avoiding the removal of trees within bald eagle roosting and nesting habitat. Therefore, **we recommend that Entrega should identify all potential bald eagle roosting trees on or immediately adjacent to the ROW and assess measures to avoid any trees that could be damaged by construction. Any potential bald eagle roosting tree that Entrega believes could not be avoided shall be identified to the staff with a justification as to why the tree must be removed and what measures Entrega considered before determining that removal was necessary. This information shall be filed with the Secretary for review and written approval of the Director of the OEP before construction or use of mitigation may begin.**

Determination Statement

Effect on Critical Habitat: No effect. No critical habitat has been designated for this species.

Effect on the Species: We conclude that the EPP *may affect, but is not likely to adversely affect* the bald eagle. This determination is based on the implementation of Entrega's proposed conservation measures and our recommendations.

Wyoming Toad

The Wyoming toad historically occurred in wet and moist habitats within the Laramie Basin in Wyoming. However, the current known distribution is restricted to a few lakes in the basin. The closest known recent occurrences of the Wyoming toad relative to the proposed project route are the Mortenson Lake National Wildlife Refuge (6.9 miles away) and the Hutton Lake National Wildlife Refuge (4.8 miles away).

Entrega's proposed route would not cross within 2 miles of either of these refuges; therefore, no surveys are proposed. If any route realignments were to come within 2 miles of either wildlife refuge, Entrega would conduct species-specific surveys for the Wyoming toad. We note that if Entrega's proposed route changes such that federally listed species habitat is crossed or new surveys are required, Entrega would not be authorized to commence construction until we have had the opportunity to review the realignment, evaluate potential impacts to federally listed species (including survey reports and correspondence with the FWS), and complete any Section 7 consultation necessary.

Determination Statement

Effect on Critical Habitat: No effect. No critical habitat has been designated for this species.

Effect on the Species: We conclude that the EPP *would not affect* the Wyoming toad. This determination is based on the lack of suitable habitat in the proposed project area.

BLM Sensitive Animal Species

Townsend's Big-eared Bat, Fringed Myotis, and Yuma Myotis

No historic communal bat roost sites (e.g., hibernacula, nursery colonies, bachelor roosts) have been recorded along the project route. Much of the project route would occur adjacent to or within previously disturbed ROW; thus we do not anticipate any direct impacts to communal roosts. Potential direct impacts to individual bats could occur as a result of crushing by vehicles and equipment during ROW clearing and other project-related construction. Impacts also would result from the incremental long-term reduction of potential foraging habitat (including habitat fragmentation) until reclamation is completed and native vegetation has become reestablished. Indirect impacts could result from increased noise levels and human presence. Entrega would minimize potential direct and indirect impacts on bats by implementing BLM Best Management Practices (BMPs).

The proposed project may impact individuals but is not likely to cause a trend to federal listing or loss of viability of these bat species.

Swift Fox

Potential impacts to breeding swift fox could result from abandonment of den sites and the potential loss of adults and young from the compaction of dens during project construction. Impacts also could result from the incremental short-term disturbance of grassland habitat until reclamation is completed and native vegetation has become reestablished. Indirect impacts would result from the increased noise levels and human presence related to construction.

Entrega would document swift fox observations and den sites within the project area during other survey efforts, in accordance with the survey plans. If an active den is identified within the ROW, Entrega would evaluate the potential for a route realignment or reconfiguration of the ROW (e.g., reduce the width of the ROW) to avoid the den. If an active den is identified outside of the ROW boundary, Entrega would minimize impacts to the den area by reducing the width of the ROW, as practical.

We believe the proposed project may impact individuals but is not likely to cause a trend to federal listing or loss of viability of the swift fox.

White-tailed Prairie Dog and Black-tailed Prairie Dog

Prairie dogs live in colonies and inhabit dry, flat, open grasslands with low, relatively sparse vegetation, including areas overgrazed by cattle. Fine-to-medium textured soils are preferred, presumably because burrows and other structures tend to retain their shape and strength better than in coarse, loose soils. White-tailed prairie dogs typically live at higher elevations and in meadows with more diverse grass and herb cover than do black-tailed prairie dogs.

During the 2004 field survey, 43 active white-tailed prairie dog colonies were identified along the project ROW between MPs 44.6 and 246.7, and 1 active black-tailed prairie dog colony was identified at MP 320.7. In addition, 42 white-tailed prairie dog colonies were identified along proposed access roads, and 1 white-tailed prairie dog colony was located at a proposed pipeyard location.

The potential effects of construction through a prairie dog colony may include temporary loss of forage and shelter due to vegetation clearing, collapsing of burrows, and temporary disruption of foraging and resting activities due to disturbance associated with construction equipment. Direct mortality of prairie dogs could result if active burrows are occupied at the time of construction. If construction occurs later in the prairie dog's reproductive season, in late May to early June, most prairie dogs are expected to be mobile and able to avoid construction traffic; however, some individual prairie dogs may be injured or killed during construction. Following construction and restoration, the revegetated ROW would provide foraging habitat for prairie dogs, and the unconsolidated soils along the trench would likely provide a good substrate for burrowing.

Larger white-tailed prairie dog colonies have been found in the proposed project area between MPs 86.0 and 152.0, while smaller, scattered towns have the potential to occur between MPs -0.5 and 86.0 and between MPs 152.0 and 300. For those prairie dog colonies that occur within the ROW footprint, Entrega would evaluate the potential for a route realignment or change to the ROW configuration (e.g., using the opposite side of the ROW to operate vehicle traffic). If it is not possible to avoid the population, Entrega would reduce the width of the ROW as practical given the extent of the colony. In addition, if a colony only occurs along the edge of the ROW, the colony edge would be flagged or exclusion fencing would be placed so that construction could avoid impacting the colony, if possible. Entrega would avoid siting staging areas, temporary workspaces, or pipe yards within active colonies. Following construction, areas of potential habitat would be restored to preconstruction conditions. Thus, we believe that the EPP may impact individuals but is not likely to cause a trend to federal listing or loss of viability of these prairie dog species.

Golden Eagle, Ferruginous Hawk, Swainson's Hawk, American Peregrine Falcon

Potential impacts to these raptors are discussed along with other migratory birds in section 3.5.2, above.

Western Burrowing Owl

Burrowing owls typically use burrows made by prairie dogs and other small mammals. Destruction of burrows could result in displacement of owls into less suitable habitats, potentially increasing susceptibility

to predation, reducing cover or forage habitat, or reducing reproductive success. Displacement, injury, or direct mortality could result if active burrows are occupied at the time of destruction.

While Entrega has not proposed species-specific surveys for the burrowing owl, surveyors would note owl presence when conducting habitat surveys and when surveying for mountain plover, prairie dogs, and black-footed ferret. One burrowing owl was spotted at about MP 163.2 during Entrega's 2004 habitat surveys. Entrega's on-site EI or biological monitor would take note of any occurrences sighted during active construction. If active burrows are identified, Entrega has committed to adhering to the appropriate spatial and seasonal buffers (i.e., a 0.75-mile-wide radius from February 1 to July 31). Thus, we believe that the EPP may impact individual burrowing owls but is not likely to cause a trend to federal listing or loss of viability to this species.

Greater Sage-Grouse

The greater sage grouse is designated as a sensitive species by the BLM, and was been petitioned for federal listing consideration. In April 2004, the FWS determined that listing the sage grouse under the ESA may be warranted and initiated a status review. However, based on a 12-month finding for petitions to list the greater sage grouse as threatened or endangered, the FWS subsequently determined that the listing is not warranted (70 FR 2244).

Sage grouse are highly dependent on sagebrush for cover and food. Sagebrush also serves as the critical component in leks (strutting grounds), nesting, feeding sites, rearing sites, and wintering grounds. Although the sage grouse typically prefers taller sagebrush plants and stands for nesting and roosting cover, lekking grounds are generally open areas with low, sparse sagebrush, such as swales, meadows, and burned areas. Lekking grounds are generally surrounded by areas of 20 to 50 percent low-height, sagebrush cover. Secondary to sagebrush habitat, sage grouse require moist wetland and wet meadows to aid in brood rearing.

Potential direct impacts of construction on sage grouse may include the loss of lekking grounds and other sage grouse habitat. Although the EPP would not result in a permanent loss of habitat along the pipeline ROW, the regeneration of sagebrush would likely be slow and could take up to several decades. However, potential impacts on sage grouse habitat would be minimized by locating the proposed ROW within previously disturbed areas (i.e., adjacent to existing pipelines and/or roads) to the extent possible. Given the abundant suitable habitat in the general area, it is not likely that the minor, yet long-term loss of habitat along the pipeline ROW would affect sage grouse populations in the vicinity of the proposed project.

Depending on the timing of construction, the proposed project could potentially impact sage grouse during lekking activities or brood rearing, and could cause displacement, injury, or direct mortality of individuals. Sage grouse are particularly sensitive to disturbances while they gather on lekking grounds on mornings and evenings from early March to early May. Construction activities and associated noise occurring in early morning and late afternoon or early evening in the vicinity of lekking grounds could disrupt and potentially displace sage grouse that have gathered for breeding activities. In addition, once breeding activities have concluded, sage grouse hens create their nests on the ground underneath sagebrush plants in proximity to the lekking grounds. The proposed project could potentially impact nesting sage grouse by destroying nests,

causing nest abandonment, or causing injury or direct mortality to the young. In addition, brood rearing habitat could potentially be impacted by causing injury or direct mortality to the young.

A total of 34 historic sage grouse lek sites have been identified as occurring within 2 miles of the project ROW in Colorado and Wyoming (CDOW 2004a; WGFD 2004). Of these, 7 lek sites (4 leks in Colorado and 3 leks in Wyoming) would occur within 0.25 mile from the ROW. Surveys for breeding sage grouse were conducted within 2 miles of the project ROW during the 2004 breeding season, in accordance with survey plans. A total of 7 active lek sites including 4 historic leks and 3 new leks were documented during these surveys in Colorado and Wyoming. In addition, Entrega's 2004 surveys identified sage grouse at about MP 81.3.

Entrega has proposed additional preconstruction surveys for sage grouse leks. These surveys would be conducted by appropriate BLM protocols. For an active lek identified by the surveys within 0.25 mile of the construction ROW, Entrega would minimize impacts to the lek and its associated nesting habitat by beginning construction after June 30, or as otherwise permitted by the appropriate resource agency. In addition, Entrega would minimize impacts to the lek by reducing the width of the ROW through the lek as practical and avoiding permanent surface development within 0.25 mile of a known lek.

For suitable nesting habitat associated with an active lek identified by the surveys within 2 miles of the construction ROW, Entrega would minimize direct impacts to nesting habitat by beginning construction after June 30 and reducing the width of the ROW as practical, or as otherwise permitted by the appropriate resource agency. No permanent aboveground facilities would be constructed within 0.25 mile of a known lek site along the project route.

For suitable brood-rearing habitat associated with an active lek identified by the surveys within 2 miles of the construction ROW, Entrega would minimize direct impacts to brood-rearing habitat by beginning construction after July 15 and reducing the width of the ROW as practical, or as otherwise permitted by the appropriate resource agency.

Following construction, the project area would be restored to preconstruction contours and areas of suitable habitat would be restored by broadcast seeding with a seed mix that includes native species and is acceptable to the landowner, local NRCS, or other applicable agencies.

To further minimize potential impacts to the sage grouse, **we recommend if low-intensity preconstruction (e.g., surveying and staking) work is necessary within 2 miles of known sage grouse leks between March 1 and June 30, activities should occur only between 9:00 a.m. and 4:00 p.m.**

Potential indirect impacts to the sage grouse could result from increased noise levels from the operation of the proposed Bighole Compressor Station in Moffat County, Colorado. Noise levels attributable to operation of the facility are estimated to be a day-night equivalent sound level (L_{dn}) of approximately 82 decibels on the A-weighted scale (dBA) at the station fenceline. Based on existing sage grouse lek data for the project area, three lek sites have been documented approximately 2 miles from the proposed station site. **Table 3.6-1** shows the noise attributable to station operation extrapolated out to 2 miles from the site.

Table 3.6-1
Estimated Noise Attributable to the Proposed Bighole Compressor Station

Distance	0	1 mile	1.5 miles	2 miles
Noise Level, L_{dn} (dBA)	82.0	49.9	45.6	43.9

As shown in the table, noise level quickly drops below the "ambient" L_{dn} 47.8 dBA at the 2 miles (as identified in section 3.10, Air and Noise Quality). However, it should be noted that the A-weighted scale is weighted specifically for human hearing sensitivity and that there are currently no data on the range of frequency or noise impact thresholds applicable to sage grouse. Studies suggest a noise level of approximately 47 dBA to be the threshold effect for bird species in grassland and woodland habitat (LaGory et al. 2001; Reijnen et al. 1997, 1996) and that reducing continuous noise levels to 49 dBA or less would minimize indirect effects to songbirds and raptors during the breeding season (WGFD 2004). Consequently, we do not believe that the operation of the Bighole Compressor Station would result in adverse impacts to known lek sites within the project area. However, noise attributable to the operation of the Bighole Compressor Station would likely affect habitat suitability for nesting and brooding sage grouse within one mile (approximately 2,000 acres) of the facility over the life of the project.

Mountain Plover

The mountain plover is a migratory species whose breeding habitat includes prairie grasslands, shrub-steppe communities, dry land farmlands, and prairie dog towns. Plovers usually nest on level terrain occupied by sparse, short vegetation (typically 4 inches or less in height). The sparse vegetation is commonly caused by herbivore grazing (domestic livestock and prairie dogs), and surface disturbance from human activities (e.g., well pads, bladed lay down areas) (FWS 2002b). Suitable shrub-steppe and grassland habitats for this species are crossed by a long EPP segment in Colorado and Wyoming.

The primary mountain plover nesting period is from May 1 through June 15. Young chicks commonly stay on the nest or freeze in place to avoid detection from about June 15 through July 10, resulting in a higher potential for losses from excavation equipment traversing over nest sites. After July 10, the chicks are sufficiently mobile to move away from construction equipment.

Approximately 193 miles of potentially suitable mountain plover habitat was identified along the project ROW between MPs 44.0 and 327. Mountain plover habitat also was identified along 38 proposed access roads and at 2 proposed pipeyard locations. Individuals were spotted between MPs 113.3 and 124.2 during the 2004 field surveys.

If construction were to occur during the breeding season (mid-April through early July), impacts to nesting mountain plover could include abandonment of a breeding territory or nest site or the potential loss of eggs or young as a result of construction activities (e.g., ground disturbance, noise, human presence).

Impacts also would result from the incremental short-term disturbance of grassland habitat until reclamation is completed and native vegetation has become reestablished. Indirect impacts would result from the incremental increase in noise levels and human presence.

Surveys for mountain plover would be conducted within suitable habitat, in accordance with the survey plans. Survey procedures would be based on the Mountain Plover Survey Guidelines (FWS 2002b) for large scale/long term linear projects. Mountain plover habitat would be surveyed 3 times during the survey window (April 10 to July 10), with each survey separated by at least 14 days, if possible. Surveys would be conducted within 0.25 mile of the pipeline centerline by driving and making visual observations of overlapping transects. The timeframe of the surveys would be sunrise to 10 a.m. and 5:30 p.m. to sunset. The location of active plover nests would be recorded on maps using Global Positioning System coordinates. If an active mountain plover nest is found, the nest would be recorded and reassessed immediately before construction, if construction is expected to occur between April 10 and July 10. If the nest is still active at that time of construction, construction would be prohibited within 0.25 mile of the nest until the young have fledged.

If a plover family group is identified during surveys or immediately before construction, the group would be monitored by a biologist to determine its use pattern. The area being used by the family group would be marked with signs designating the area as sensitive if the group does not move at least 200 meters from the proposed centerline. Construction equipment would be allowed a one-time pass through the area with the biologist present to monitor plover location and response.

The proposed project may impact individual mountain plovers but is not likely to cause a trend to federal listing or loss of viability.

Loggerhead Shrike

This species was identified during Entrega's 2004 field surveys at six locations along the project ROW between MPs 81 and 174. Potential impacts to this migratory bird species would be the same as discussed for other migratory bird species in section 3.5.2, above.

Great Basin Spadefoot, Northern Leopard Frog, and Midget Faded Rattlesnake

Potential impacts to amphibian and reptile species include direct mortalities of individuals from construction activities, ground compaction, and vehicle traffic within suitable habitat. Impacts also would result from the incremental long-term reduction of potential habitat until reclamation is completed and native vegetation has become reestablished.

Entrega's 2004 surveys identified 6 northern leopard frogs between MPs 5.7 and 13.7. The other two species were not found during surveys.

Occurrences of these amphibian and reptile species within the project area would be documented during other survey efforts, in accordance with the survey plans. If these species are identified, biological monitors would clear the construction ROW of individuals prior to construction and install exclusion fencing to a depth

of 6 inches into the ground in the area of suitable habitat containing the population to keep individuals from entering the construction ROW.

The proposed project may impact individual amphibians and reptiles but is not likely to cause a trend to federal listing or loss of viability.

3.6.3 Fish Species

Nine sensitive fish species were originally identified as potentially occurring within the project area. These species, their associated habitats, and their potential for occurrence along the project route are summarized in appendix K. The potential for occurrence at stream crossings and downstream reaches was evaluated for each species based on its habitat requirements and/or known distribution. Based on these evaluations, the pallid sturgeon was eliminated from further analysis. The federally listed bonytail chub, humpback chub, and razorback sucker do not occur in the project area but are included in the detailed analysis based on the project's potential water depletion activities (i.e., hydrostatic testing) in the Colorado River Drainage. The federally listed Colorado pikeminnow could occur at the proposed crossing location of the Yampa River and downstream reaches in the White River. In addition, designated critical habitat for the Colorado pikeminnow occurs at the proposed White and Yampa River crossing locations (MPs 15.1 and 50.5, respectively). The remaining four fishes (bluehead sucker, flannelmouth sucker, mountain sucker, and roundtail chub) are BLM sensitive species that potentially occur in the White and Yampa Rivers.

A potential leak or rupture under the White and Yampa Rivers during drilling could accidentally release muds (called a "frac-out") or disturb bottom sediments in a localized area near the rupture site. The release of drilling muds (primarily bentonite and cellulose) could cause localized increases in sediment loads and could fill interstitial gaps in the streambed, smothering habitat for benthic invertebrates, larval fish, and eggs. The amount of area impacted by a release of drilling muds would be relatively small since the consistency of the drilling muds would limit widespread dispersal along the streambed. To reduce the impacts of a frac-out, Entrega has prepared a Horizontal Directional Drilling Inadvertent Release Control Plan (HDD Plan; Entrega 2004f) that identifies detection and monitoring procedures, response equipment, notification procedures, and corrective actions. By implementing the measures in this plan, potential impacts to sensitive fish species in the White and Yampa Rivers would be minimized and short-term in duration.

Federally Listed Species

Bonytail Chub, Humpback Chub, Razorback Sucker, Colorado Pikeminnow (impacts from water depletions)

The FWS has expressed concern about the potential downstream impacts on federally listed species resulting from hydrostatic test water withdrawals from the Upper Colorado River Basin. The federally endangered bonytail chub, humpback chub, razorback sucker, and Colorado pikeminnow are known to occur in downstream portions of the White, Yampa, and Little Snake Rivers, which are part of the Upper Colorado River Basin. These fishes could be adversely affected by any action causing water depletions to the Colorado River system.

Habitat for the bonytail chub, humpback chub, and razorback sucker does not occur at the proposed crossings of the White, Yampa, and Little Snake Rivers (FWS 1994). However, habitat is present for these species at varying distances below the proposed crossings. The closest occupied or critical habitat is located at the following approximate distances downstream of the proposed crossings: 30 to 40 miles downstream of the Yampa River crossing (razorback sucker, humpback chub, and bonytail chub); 60 miles downstream of the White River crossing (razorback sucker); and at least 30 miles downstream of the Little Snake crossing (razorback sucker). Consequently, project effects to these fish species would be limited to potential water depletions from hydrostatic testing within the Colorado River drainage. The Colorado pikeminnow likewise occurs downstream of the proposed White and Yampa River crossings and could be affected by water depletions; however, this species also could occur at the location of the proposed Yampa River crossing. Direct effects to this species and its critical habitat are discussed later in this section.

Water depletion impacts resulting from the withdrawal of 81.6 acre-feet for hydrostatic testing could include a slight temporary reduction of potential spawning and rearing habitat in the Upper Colorado River Basin due to changes in downstream water flow. No changes in water temperature or dissolved oxygen would be anticipated as a result of the relatively small water volume. Potential impacts would be greatest during the spawning periods for these species in spring and early summer. The FWS defines a "depletion" as consumptive loss plus evaporative loss of surface or groundwater within the affected basin. Any water depletion would represent an adverse impact on habitat for the Colorado pikeminnow, razorback sucker, humpback chub, and bonytail, and must be considered in formal Section 7 consultation.

However, if water is returned to the source waterbody within a certain amount of time after withdrawal, the threshold for "depletion" and formal consultation may not be reached. Factors to consider in determining downstream effects to listed fishes include what time of the year water is withdrawn, whether the water has been treated, other water uses at the time of withdrawal (cumulative impact), and how close to the withdrawal source the water is returned (i.e., a source location return vs. a "basin return").

Entrega plans on withdrawing approximately 81.6 acre-feet (26.6 million gallons) of water from three locations along the White, Yampa, and Little Snake Rivers during September (see **table 3.3-3**). Hydrostatic testing for the various test sections is currently planned to occur over a multiple-day period. The actual duration of hydrostatic testing for a given test section would be dependent on the rate of withdrawal and the section of pipe that would be tested. Entrega's hydrostatic testing plan is included as appendix I of this EIS. In order to avoid or minimize potential impacts to Colorado River endangered fish species from water withdrawal in the Colorado River basin, the FWS would prefer that water withdrawal activities occur between October 1 and June 30. In addition, the FWS indicated that water withdrawal would probably not be permitted along the Yampa River between September 1 and September 15 since water has been purchased in that drainage to supplement flows to the Colorado River under action identified in the Colorado River Fishes Recovery Plan (Abbott 2004). We acknowledge these dates are in conflict with Entrega's proposed water withdrawal activities. Therefore, **we recommend that Entrega coordinate with the FWS on the timing of water withdrawal from the Colorado River drainage in order to avoid or minimize potential impact on Colorado River endangered fish species. Following this coordination and prior to hydrostatic test water withdrawal, Entrega shall file a revised hydrostatic test plan with the Secretary for review and written approval by the Director of OEP.**

The *Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin* (Recovery Plan) was established in 1988 to mitigate for water depletion impacts to for Colorado River federally endangered fish species. To ensure the survival and recovery of the listed species, water users are required to make a one-time payment to the Recovery Program. The current depletion fee (through September 2005) is $15.93/acre-foot. In 1995, an intra-FWS Opinion determined that the fee for depletions less than 100 acre-feet (annual average) would no longer be required (FWS 1995).

Entrega would further minimize the potential effects of hydrostatic testing on surface water resources by adhering to the measures in its Procedures and hydrostatic testing plan. These measures include screening intake hoses to prevent the entrainment of fish and other aquatic organisms and regulating the rate of withdrawal of hydrostatic test water to avoid adverse impact on aquatic resources or downstream flows. Entrega would not withdraw the hydrostatic test water from waterbodies at a rate that would alter the river's flow.

Entrega proposes to discharge hydrostatic test water withdrawn from surface waters directly back into those sources immediately following hydrostatic testing. Discharges would be governed by the volume of water in a test section and the discharge rate. Potential impacts from water discharge could result in increased erosion of the stream banks and stream bottoms, resulting in a temporary increase of sediment load and destruction of habitat. Entrega would minimize the potential for these effects through the use of energy-dissipating devices that would disperse and slow the velocity of any discharges. We do not anticipate the introduction of contaminants because Entrega would test only new pipe and would not chemically treat the water.

Colorado Pikeminnow (impacts from waterbody crossings)

The Colorado pikeminnow inhabits medium to large rivers in the Upper Colorado River Basin including the Colorado, Gunnison, Green, White, and Yampa Rivers. The adults use deep, turbid, strongly flowing eddies, runs, flooded bottoms, or backwaters (especially during high flow), while juveniles prefer small, quiet backwaters.

HDD activities would disturb a total of approximately 5 to 10 acres per crossing within the 100-year floodplain of the Yampa and White Rivers. These areas would be located within designated critical habitat for the Colorado pikeminnow. Surface disturbance would be required for the bore pits, drilling equipment, and pipe strings. However, the HDD work areas would be located outside of the water level of the river, which would avoid instream impacts. Construction techniques and reclamation would be designed to minimize potential increased sedimentation during future high water events. Since construction equipment would be refueled and lubricated outside of the 100-year floodplain, no fuel spills or leaks would affect habitat for Colorado pikeminnow.

Entrega's proposed HDD crossings of the White and Yampa Rivers would avoid instream impacts and thus would have little to no effect on the Colorado pikeminnow or its designated critical habitat. If a rupture or leak occurred during drilling, short-term sedimentation and bottom disturbance could occur at the crossing, as described earlier in this section. By implementing the measures in HDD Plan, potential impacts to Colorado pikeminnow would be minimized and short-term in duration.

However, if an HDD crossing could not be completed at a particular location, Entrega would likely request to cross using an open-cut technique. A non-HDD crossing would have the potential for greater impact on the Colorado pikeminnow. We typically require an applicant to file a site-specific alternate crossing plan for our review before a non-HDD crossing could begin. We note in this case that Entrega originally proposed to cross the White and Yampa Rivers by open cuts; thus, certain mitigation measures applicable to the open cut technique are already on file for this project. Such measures would help minimize instream impacts from sedimentation and turbidity. Entrega's originally proposed measures included expedited crossings in accordance with Entrega's Procedures, storage of trench spoil and locating extra workspaces at least 50 feet from the streambank, use of sediment barriers, limiting the clearing of vegetation as practical, performing immediate post-construction stabilization of streambanks, and returning stream channels and banks to preconstruction contours

Although we believe Entrega's originally proposed crossing plans provide a good framework for an evaluation of impacts on the Colorado pikeminnow from an open-cut crossing, our determination of effect for this species is dependent on the crossings being completed by HDD. We would still need to evaluate a non-HDD crossing and consult further with the FWS in order to comply with Section 7 of the ESA. Therefore, **we recommend that in the event that Entrega cannot complete an HDD crossing of the White or Yampa Rivers, Entrega shall not begin a non-HDD crossing until the staff completes any necessary Section 7 consultation with the FWS, and the Director of OEP notifies Entrega in writing that it may proceed with an alternate river crossing method.**

Determination Statement

Colorado Pikeminnow (impacts from water crossings)

Effect on the Species and Critical Habitat: Entrega's crossing of the Yampa and White Rivers, as proposed, *may affect, but is not likely to adversely affect* the Colorado pikeminnow or its critical habitat. This determination is based on Entrega's proposed HDD crossings of the White and Yampa Rivers, its HDD Plan to minimize sedimentation impacts of a frac-out, and reclamation to restore surface disturbance within the 100-year floodplain. In addition, Entrega would adhere to the fisheries construction timing window identified by the FWS (constructing between October 1 and March 1) to avoid or minimize potential sedimentation and turbidity impacts during the Colorado pikeminnow spawning season. Thus, even if a frac-out were to occur, we anticipate little to no direct impact to this species or its critical habitat.

Colorado Pikeminnow, Razorback Sucker, Humpback Chub, and Bonytail Chub (impacts from water depletions)

Effect on the Species and Critical Habitat: Entrega's withdrawal of approximately 81.6 acre-feet of water from the Upper Colorado River Drainage *may affect, but is not likely to adversely affect* the Colorado pikeminnow, razorback sucker, humpback chub, and bonytail chub or their critical habitat. By implementing the Recovery Plan, the effects of water withdrawal on habitat for these species would be mitigated. Although we believe Entrega's temporary use of about 81.6 acre-feet of water would be returned to the same locations and source waterbodies, it may still be considered a "depletion" by the FWS. If so, we request that

the FWS consider this EIS/BA our initiation of formal consultation under Section 7 of the ESA for the bonytail chub, humpback chub, razorback sucker, and Colorado pikeminnow. Entrega would not be authorized to contribute to a depletion in the Colorado River basin until any necessary consultation is completed.

BLM Sensitive Species

Bluehead Sucker, Flannelmouth Sucker, and Mountain Sucker – These native species occur in the Yampa and White Rivers and Piceance Creek. They utilize a variety of habitats that include riffles, pools, runs, and backwater areas in larger streams and rivers. Spawning occurs in the spring or early summer at lower elevations (Woodling 1985).

Roundtail Chub – This species also inhabits a variety of habitats in the White and Yampa Rivers. Adults prefer pools associated with undercut banks and other types of cover, while young fish occur in shallower water with lower velocities. All age groups prefer cobble-rubble, sand-cobble, or sand-gravel substrates (Woodling 1985). Runs and riffles are used primarily during feeding. Spawning occurs in the spring or early summer.

Since these species potentially occur at and downstream of the proposed crossings, impacts of water withdrawal and stream crossing construction would be the same as described for the Colorado pikeminnow.

We believe the EPP may impact individual fish but is not likely to cause a trend toward federal listing or loss of viability for these species.

3.7 Land Use, Recreation, Visual Resources

3.7.1 Land Use

Land Ownership

About 44 percent (143 miles) of the land crossed by the proposed EPP route and aboveground facilities is managed or owned by public entities. Of the public land total, the majority is federally managed, while a smaller portion is managed or owned by the State of Colorado, the State of Wyoming, or local municipalities. The federal lands are entirely managed by the BLM. State lands in Colorado crossed by the proposed pipeline route are owned or managed by CDOW or the Colorado Land Board. State lands that would be crossed in Wyoming are owned or managed by the WGFD or the Wyoming Board of Land. Local government owners/managers consist of municipalities, such as Rawlins, Laramie. **Table 3.7-1** summarizes public land ownerships that would be crossed by the proposed pipeline route.

Table 3.7-1
Summary of Federal, State, and Local Government Owned Lands
Crossed by the Proposed Pipeline Route

State/Ownership	Approximate Crossing Length (miles)	Percent of Total Length
COLORADO		
Federal	27.2	8
State	15.5	5
Local	0.4	<1
Colorado Subtotal	43.1	
WYOMING		
Federal	78.3	24
State	12.9	4
Local	8.6	3
Wyoming Subtotal	99.8	
Project Total	142.9	44

The remaining 56 percent (184 miles) of the proposed pipeline route would cross privately owned land.

Land Use Plans and Policies

The proposed project would cross about 105 miles of land managed by three BLM FOs: the White River FO in Meeker, Colorado; the Little Snake FO in Craig, Colorado; and the Rawlins FO in Rawlins, Wyoming. BLM land accounts for about 32 percent of the total pipeline route. In general, the BLM manages these lands for multiple uses, including recreation, wildlife management, livestock grazing, wild horses, and mineral resources under guidelines set forth in the three Resource Management Plans (RMPs) that BLM uses for management direction (BLM 1997, 1990, 1986).

Construction of the proposed project would be consistent with the existing BLM RMPs and would not preclude the management objectives set forth for BLM offices. Entrega's POD is being developed in coordination with BLM FOs. The POD is a construction plan that includes procedures for the use of BLM roads, soil and water protection measures, revegetation and weed control/management standards, biological and cultural resource protection measures, livestock and wild horse management measures, and post-construction monitoring requirements (see section 2.3, Construction Procedures).

Land owned by the states of Colorado or Wyoming that would be crossed by the proposed pipeline route is managed for wildlife habitat, recreational uses, or leased to private tenants for livestock grazing. Some state lands are special interest areas and are discussed in section 3.7.3. The remaining scattered portions of state owned or managed lands not identified as special interest areas are leased to private entities for livestock grazing and ranching. Entrega would acquire the necessary permits and approvals for construction on state lands. Environmental protection measures attached to lease agreements would be similar to those described for the BLM above.

Project Land Requirements

The EPP would require land for the construction ROW, permanent ROW, additional temporary workspace areas, access roads, pipe and contractor yards, and construction and operation of aboveground facilities. Land use calculations were based on a 100-foot-wide construction ROW, except in wetlands and riparian woodlands where the construction ROW would be reduced to 75 feet. As outlined in chapter 2.0, a 50-foot-wide permanent easement would be acquired by Entrega. This 50 foot wide portion of the easement, referred to as the permanent ROW, would be maintained in an open condition (i.e., generally free of trees and aboveground structures) for the life of the pipeline facilities. Impacts on land use for operation of the pipeline facilities were calculated based on the 50-foot ROW width. Land use calculations for additional temporary workspace areas were based on typical requirements. Access roads, pipe and contractor yards, and aboveground facilities were based on each feature's dimensions.

The principal land use that would be affected by the proposed pipeline route and its associated facilities is rangeland (about 298 miles, or 91 percent of the total pipeline length). Other land uses that would be crossed by the proposed pipeline include forest land (14 miles; about 4 percent); agricultural land (15 miles; about 5 percent); and residential/commercial land (less than 1 miles; <1 percent).

Construction of the proposed EPP would temporarily disturb 5,064 acres. Of that total 2,084 acres would be retained by Entrega as permanently maintained pipeline ROW and for operation of the proposed aboveground facilities (including powerlines and permanent access roads) (**table 3.7-2**). The predominant land use that would be affected by construction is rangeland (4,624 acres), followed by forest land (211 acres), agricultural land (199 acres), and residential/commercial land (30 acres). Operation of the proposed project would affect 1,899 acres of rangeland, 90 acres of forest land, 95 acres of agricultural land, and <1 acre of residential/commercial land.

Table 3.7-2
Summary of Land Uses Affected by Construction and Operation of the Entrega Pipeline Project
(Acres)[1]

State/ Facilities	Rangeland		Forest Land		Agricultural Land		Residential/ Commercial Land		Total[6]	
	Const[2]	Oper[3]	Const[2]	Oper[3]	Const[2]	Oper[3]	Const[2]	Oper[3]	Const[2]	Oper[3]
COLORADO										
Pipeline (main)	975	458	128	57	108	59	<1	<1	1,212	575
Pipeline (lateral)	15	15	0	0	0	0	0	0	15	15
Aboveground[4]	40	40	0	0	5	5	0	0	45	45
Permanent Access Roads	<1	<1	0	0	0	0	0	0	<1	<1
ATWS[5]	96	0	8	0	19	0	0	0	122	0
Yards	58	0	0	0	0	0	3	0	61	0
Powerlines	2	2	0	0	0	0	0	0	2	2
Colorado Subtotal[6]	1,186	515	136	57	132	64	3	<1	1,457	636
WYOMING										
Pipeline (main)	2,802	1,346	73	33	60	31	1	<1	2,935	1,411
Pipeline (lateral)	7	7	0	0	0	0	0	0	7	7
Aboveground	20	20	0	0	0	0	0	0	20	20
Permanent Access Roads	6	6	0	0	0	0	0	0	6	6
ATWS[5]	275	0	2	0	7	0	0	0	285	0
Yards	324	0	0	0	0	0	26	0	350	0
Powerlines	4	4	0	0	0	0	0	0	4	4
Wyoming Subtotal[6]	3,438	1,383	75	33	67	31	27	<1	3,607	1,448
Project Total[6,7]	**4,624**	**1,899**	**211**	**90**	**199**	**95**	**30**	**<1**	**5,064**	**2,084**

1 Does not include temporary access roads.
2 Const – construction. Based on a 100-foot-wide construction ROW, except in wetlands where a 75-foot-wide ROW would be used, and where construction ROW is increased due to site-specific conditions.
3 Oper – operation. Based on a 50-foot-wide permanent ROW. Includes aboveground facilities, permanent access roads, and transmission lines.
4 Aboveground facilities include compressor stations, pig launchers and receivers, and/or meter stations, and, where constructed within compressor station sites, mainline valves. Does not include a total of 0.9 acre of rangeland that would be permanently converted to commercial land for 17 mainline valves located along the pipeline route and outside of compressor or meter station sites.
5 Additional temporary workspace areas (only used during construction).
6 The numbers in this table have been rounded for presentation purposes. As a result, the totals may not reflect the exact sum of the addends in all cases.
7 Wetland acreages as determined by NWI maps are included within surrounding vegetation types. Refer to **table 3.4-3** for NWI-mapped wetlands.

Rangeland. In areas where rangeland is used for grazing, construction activities could reduce the carrying capacity of BLM grazing allotment and privately held pastures, and could hinder the movement of livestock across those allotments. To minimize impacts on grazing areas, Entrega has agreed to implement the following BLM-approved mitigation measures:

- fences crossed by the proposed pipeline route would be cut in a manner to prevent slack, and gates would be installed across the opening to prevent livestock passage, if required;
- temporary fencing would be installed to prevent livestock from entering the construction area;
- trench plugs would be installed across the trench where it crosses livestock trails to allow passage, and ramps would be installed to allow for the escape of livestock should they fall into the trench; and
- natural barriers removed during pipeline activities would be repaired or restored to pre-construction condition or if repair is not feasible, a fence would be installed in its place.

Following construction, temporary fences would be removed, the ROW restored to its pre-construction condition, and livestock would be allowed to graze and roam freely over the permanent ROW. Given the narrow, linear nature of the project, livestock forage reductions would be minor in comparison to the forage available on large BLM allotments and large private ranches that would be crossed. Pre- and post-construction weed management programs, and reseeding with mixtures approved by the BLM and state agencies would be applied. Although easement agreements may vary among landowners, similar weed control and revegetation measures would likely be included in private landowner easement agreements. The BLM and the FERC would conduct post-construction monitoring to verify revegetation success, and to identify any areas along the post-construction ROW that require further stabilization.

Operation of aboveground facilities would require the permanent conversion of about 60.9 acres of rangeland to industrial use for three compressor and meter stations plus 17 mainline valves located along the pipeline ROW.

Agricultural Land. Agricultural land crossed by the EPP consists of both dryland pastures and irrigated pastures and haylands. Of particular concern are soil replacement and drainage restoration across irrigated fields and pastures. Entrega would implement its irrigation restoration plan to insure that post-construction productivity matches that of pre-construction conditions. Hay crops may be lost for one season where haylands are crossed by the pipeline construction ROW, and it may require 1 to 2 years for disturbed, reseeded areas to return to pre-construction productivity levels. Aboveground facilities would occupy about 5 acres of agricultural land use types (irrigated pasture or hayland).

Forest Land. The EPP would not cross any land that is specifically managed for forest products (e.g., timber). The primary forest land types are pinyon-juniper woodland in western Colorado, scattered patches of ponderosa pine between Laramie and Cheyenne, Wyoming, and cottonwood riparian communities at the major river crossings. Depending on agreements with landowners, it is anticipated that mature juniper trees would be salvaged for fenceposts, and both juniper and pinyon pines would be stacked adjacent to the

construction ROW for recovery as firewood. Removal of mature ponderosa pine and cottonwood would be very infrequent, and avoided where possible. Following construction, trees and shrubs would be allowed to regenerate within the areas that would not be retained as part of the 50-foot-wide permanently maintained ROW. In riparian woodlands, the permanent ROW would be limited to a 10-foot-wide strip centered over the pipeline. The permanent ROW would be maintained to support primarily herbaceous or shrub dominated communities. The rate of forest reestablishment would vary depending on species and weather conditions, but would generally exceed 50 years. No aboveground facilities would be located within forested or woodland areas.

Residential and Commercial Areas. The proposed route would traverse rural residential areas between Laramie and the crossing of I-25 south of Cheyenne. The EPP would be located within an existing pipeline corridor in this segment. The EPP would be within 50 feet of one existing residence at MP 304.7. Prior to construction, Entrega plans to acquire the structure for removal as it is dilapidated and has been confirmed to be vacant. The landowner has approved of and has requested removal of the structure due to its severely dilapidated condition. At this site, a total of about 300 feet of residential land would be crossed. Three residential or out-building structures are located within 250 feet of the construction ROW. Two buildings were identified at MP 35, and a third building at MP 305.8. The access roads and driveways of these two residences would be crossed by the pipeline. Construction in the vicinity of these residences and residences at greater distances could potentially cause brief increases in fugitive dust, equipment noise, and brief delays along existing county and private roads crossed by the pipeline. The EPP has committed to control fugitive dust along its construction ROW, and to maintain at least one lane of traffic open across roads that are trenched to lay pipe.

Entrega has consulted with the counties crossed by the proposed pipeline route and towns located near the proposed project to request information about planned future residential and commercial developments. As a result of these consultations, one future residential development, Willasden Estates, was identified as being located within 0.25 mile of the proposed project area. The Willasden Estates residential development would be crossed between about MPs 305.1 and 306.0 in Laramie County, Wyoming. The development is subdivided into 36 residential lots. The proposed pipeline would be located adjacent to an existing pipeline ROW through the development. The timeframe for construction of this residential development is currently unknown. However, Entrega would consult with the City of Laramie and the developer to minimize impacts on future construction and development within the Willasden Estates development.

The City of Laramie, Wyoming, is planning to construct a landfill near the route between MPs 307.7 and 308.7 on property referred to as the Belvoir Ranch. The landfill would be greater than 0.25 mile from the proposed pipeline construction ROW. The timeframe for construction of this landfill is currently unknown. Given the distance from the pipeline, we do not anticipate that the proposed pipeline would affect the future construction of the landfill.

Recreational and Public Interest Areas

The proposed pipeline route would cross a total of 13 recreation and special interest areas (one area would be crossed twice and one feature would be crossed six times) (**table 3.7-3**). One additional recreation and special interest area is within 0.25 mile of the proposed project. The route does not cross any ACECs,

Wilderness or Wilderness Study Areas, or Wild and Scenic Rivers. Of the 13 recreation and special interest areas that would be crossed by the proposed route, 3 are located in Colorado, and the remainder in Wyoming. The pipeline would not cross any developed recreation areas (i.e., campgrounds, picnic grounds, or organized recreation areas such as baseball fields).

Pipeline construction would have temporary impacts on recreational traffic and use patterns. Sight seers, hikers, wildlife viewers, off-highway vehicle users, and mountain bikers would be displaced from the immediate area during construction. Issues in common to all these recreational and special interest areas are soil disturbance and revegetation, repair and maintenance of public access roads, and EPP coordination with the agency managers to minimize conflicts between construction activities and the recreational uses for which these special areas were established. It is anticipated that lease agreements between EPP and the BLM state land managers would include measures to ensure that the ecological functions of these areas are maintained, and recreational conflicts are avoided or minimized. Of most concern are:

1. Rio Blanco Lake SWA in Rio Blanco County, where lake fishing is provided. The pipeline would cross the White River downstream of the Lake, and at least 500 feet from developed facilities, so it is expected that most conflicts with recreational uses could be avoided.

2. Piceance Creek SWA, and Bitter Brush SWA in Colorado, and the Red Rim-Daley Wildlife Habitat Area Management Area, Simpson Ridge Hunter Management Area, Wick/Beumee Wildlife Habitat Management Area, and Strouss Hill Hunter Management Area in Wyoming. Potential conflicts could occur between hunter use and pipeline construction if the EPP constructs across these areas during the hunting season. The EPP would coordinate with the wildlife managers in both states to insure continued hunter access during hunting seasons.

3. Overland Trail and Continental Divide Scenic Trail. There are no historic interpretation signs or areas at the proposed EPP Overland Trail crossings, and no well-preserved wagon ruts are evident. The EPP would cross the Continental Divide Scenic Trail where the trail coincides with Wyoming State Route 71, which is a paved highway on the outskirts of Rawlins. Depending on the season of the crossing, and the level of recreational use, a detour around the work area would be provided.

4. White, Yampa, and North Platte Rivers. Entrega proposes to cross the White and Yampa Rivers by horizontal directional drilling, which would not result in channel disturbance, except for installation of temporary bridges across these rivers to move equipment. Entrega proposes to open-cut the North Platte River. The pipeline would cross the North Platte River Special Recreation Management Area (SRMA), which is owned and managed by the BLM and provides access for recreational uses such as fishing, rafting, canoeing, and camping. Construction activities would likely coincide with peak summer use of the recreational area. Construction could temporarily disrupt recreational access and use of the area, primarily as a result of construction-related traffic and equipment, noise, and air quality. Carbon County Road (CR) 347 runs adjacent and parallel to the west side of the North Platte River at the proposed crossing location (MP 192.8). The road is the only access to the Rochelle Easement, which provides public access for fishing, recreational use, and waterfowl hunting south of I-80. During warmer

Table 3.7-3
Recreation and Special Interest Areas Crossed by or Within 0.25 Mile of the Proposed EPP Route

State/County	Start/End MP	Crossing Length (feet)	Construction Acres Affected[1]	Name	Ownership
COLORADO					
Rio Blanco	2.1 to 5.8	19,500	42.8	Piceance Creek SWA	CDOW
Rio Blanco	11.2 to 12.7	7,900	23.1	Piceance Creek SWA	CDOW
Rio Blanco	15.1 to 15.5	2,100	8.2	Rio Blanco Lake SWA	CDOW
Moffat	46.3 to 49.2	15,300	40.6	Bitter Brush SWA	CDOW
WYOMING					
Sweetwater	118.1[2]	25	0.1	Overland Trail	BLM
Carbon	163.6 to 165.7	11,000	36.7	Red Rim-Daley Wildlife Habitat Management Area	WGFD
Carbon	167.5 to 169.7	11,600	40.8	Red Rim Coal Area	BLM and Private holdings
Carbon	176.1	100	0.7	Continental Divide National Scenic Trail	BLM
Carbon	192.5 to 192.9	2,100	15.0	North Platte River SRMA	BLM
Carbon	213.5 to 220.4	36,500	101.8	Simpson Ridge Hunter Management Area	BLM / Wyoming Board of Land and Private holdings
Carbon	228.6[2]	25	0.4	Overland Trail	Private holdings
Carbon	230.7 to 236.4	30,000	76.4	Wick/Beumee Wildlife Habitat Management Area	BLM / WGFD
Carbon	234.3[2]	25	0.1	Overland Trail	WGFD
Carbon	235.1[3]	25	0.1	Overland Trail	WGFD
Carbon	242.4[3]	25	0.1	Overland Trail	Private holdings
Albany	247.2 to 255.3	42,700	99.0	Strouss Hill Hunter Management Area	BLM / Wyoming Board of Land and Private holdings
Albany	255.2[3]	25	0.1	Overland Trail	State of Wyoming Board of Land
Albany	269.2 to 271.4	11,600	28.2	Big Hollow National Natural Landmark	Private holdings
Albany	277.1 to 280.8	19,500	49.7	Monolith Ranch Hunter Management Area	Private holdings
Albany	291.9	Not crossed but within 0.25 mile	N/A	Medicine Bow National Forest	U.S. Forest Service (FS)

[1] Calculated based on a 100-foot construction ROW except in wetlands where a 75-foot ROW would be used, and where construction ROW is increased due to site-specific conditions. Disturbance for additional temporary workspace areas is included.
[2] Locations identified during cultural resource surveys.
[3] Locations identified on USGS topographic maps.

months, river floaters put in upstream of the proposed crossing point and then send their shuttles downstream of the construction area to takeout points accessed by this road. Entrega has recognized that its open-cut crossing of the North Platte River could interfere with recreational travel, and proposes to maintain public access along CR 347 during construction by leaving a lane of traffic open or providing a detour.

We believe that measures to minimize impacts on recreational boaters should be included as part of Entrega's Site-Specific Waterbody Crossing Plans. Therefore, **we recommend that Entrega revise its Site-Specific Waterbody Crossing Plan for the North Platte River to include specific measures to avoid or minimize impacts on recreational boat users. If an open-cut crossing is ultimately necessary at the White or Yampa Rivers, Entrega shall similarly revise the site-specific crossing plans for these locations. All revised site-specific waterbody crossing plans shall be filed with the Secretary for review and written approval by the Director of OEP prior to construction.**

Visual Resources

Visual impacts associated with the construction ROW and additional temporary workspace areas would include the removal of existing vegetation and the exposure of bare soils, as well as earthwork and grading scars associated with heavy equipment tracks, trenching, blasting, rock formation alteration or removal, and machinery and tool storage. Other visual effects may result from the removal of large individual trees that have intrinsic aesthetic value; the removal or alteration of vegetation that may currently provide a visual barrier; or landform changes that introduce contrasts in visual scale, spatial characteristics, form, line, color, or texture.

Visual impacts would be greatest where the proposed pipeline route parallels or crosses roads, trails, or Key Observation Points, and where the pipeline ROW may be seen by passing motorists or other recreational users. The impact of vegetation clearing would be shortest on rangeland consisting of short grasses and hay fields, where the reestablishment of vegetation following construction would be relatively fast (generally less than 5 years). The impact would be greater on shrub rangeland, which may take more than 5 years to regenerate. The greatest potential visual impact would result from the removal of mature pinyon pine, Utah Juniper, ponderosa pine, and cottonwood trees, which would take longer than other vegetation types to regenerate and would be prevented from reestablishing on the permanently maintained 50-foot-wide ROW. Topographic alterations such as sidehill cuts that may be necessary to construct the pipeline would be restored during ROW restoration. The visibility of such alterations would diminish over time as the affected areas age and begin to blend with the surrounding landscape.

Visual Resource Management (VRM) classes are assigned to the various landscapes managed by BLM. The BLM VRM classes range from Class I to Class IV, with Class I being the most restrictive and Class IV being the least restrictive. In general, the proposed project would cross lands designated as Class III or Class IV. Private lands that would be crossed by the proposed pipeline route are not subject to federal or state visual management standards. The Class III designation applies to the BLM-managed lands administered by the White River FO and to the majority of the BLM-managed lands administered by the Rawlins FO. A Class III designation allows for changes in the visual landscape caused by a management

activity, but should remain an insignificant portion of the visual strength of the existing landscape. The area that would be crossed by the proposed pipeline route along I-80 to the west of Rawlins, Wyoming, has been designated by the BLM as a VRM Class IV. Lands under the VRM Class IV designation are currently dominated by land disturbing structures and activities that repeat the form, line, color, and texture of the characteristic landscape.

To minimize construction impacts on visual resources, Entrega has aligned the proposed pipeline route, where feasible, adjacent to existing utility corridors. This alignment would minimize impacts on visual sightlines and contrasts with adjacent vegetation communities. In areas where collocation is not possible for engineering and/or construction reasons, Entrega would align the pipeline to avoid aesthetic features to the extent possible. Following construction, topographical contours would be returned to their preconstruction condition. Therefore, construction and operation of the proposed Entrega pipeline facilities would be consistent with the objectives and definitions of VRM Class III and VRM Class IV designations. Entrega has consulted with the BLM to ensure that the proposed project would not conflict with the VRM designations.

During agency scoping meetings and field visits with staff from the BLM FOs, Entrega committed to additional mitigation measures that would reduce the effects of project activities on visual resources at three locations, including MP 39.1 along Pine Tree Gulch, the North Platte River crossing at MP 192.7, and the SeaWest Windfarm crossing at MP 236.2. Specifically, Entrega would reduce the construction ROW from 100 feet in width to 75 feet at MPs 192.7 and 236.2. Entrega would continue to consult with the BLM and other agencies during the construction period regarding impacts on visual resources.

For aboveground facilities, the impacts on visual resources from each individual facility would depend on the pre-construction condition and the visibility from the surrounding area. The following discussions provide the landscape context for each compressor station, which are the major project aboveground structures.

1. Meeker Compressor Station. This station would be located on private land next to a Rio Blanco County road that parallels Piceance Creek and associated irrigated pastureland. While agricultural uses are dominant in the foreground, existing oil and gas development (pipeline ROWs) is evident in the background, extending in several directions from the proposed site. Although the facility is located on private land, Entrega would comply with the objectives of BLM VRM Class III, which is to partially retain the existing character of the landscape by painting the compressor station a non-reflective Shale Green, or other color approved by the BLM.

2. Bighole Compressor Station. This station would be located on private land adjacent to a county road in a remote area of Moffat County. The area is characterized by low hills and valleys dominated by sagebrush. The compressor station would represent an isolated industrial development within a relatively natural nearby landscape. However, oil and gas drilling (well pads, gathering lines) are evident within two miles north and south of the proposed compressor station site. Although the facility is located on private land, Entrega would comply with the objectives of BLM VRM Class III, which is to partially retain the existing character of the landscape by painting the compressor station a non-reflective Shale Green, or other color approved by the BLM.

3. Wamsutter Compressor Station. This station would be located on private land adjacent to I-80 and the Union Pacific Railroad approximately 2 miles west of the community of Wamsutter. Natural gas development is highly evident in the vicinity of the station site, including a wide existing natural gas pipeline corridor, surface tanks, and existing compressor stations. Entrega would comply with the objectives of BLM VRM Class IV, which allows land disturbing structures and activities that repeat the form, line, color, and texture of the characteristic landscape.

Other aboveground facilties (metering station sites, some block valves) are located at or adjacent to compressor stations. Remaining block valves would be located next to lightly traveled roads that would generally be out of public view.

3.8 Cultural Resources

Section 106 of the NHPA of 1966, as amended, requires that the Commission take into account the effects of its undertakings (including the issuance of permits or Certificates) on historic properties listed on or eligible for listing on the NRHP, and afford the ACHP an opportunity to comment on the undertaking. The FERC is using the services of the applicant (Entrega) to prepare information, analyses, and recommendations necessary to meet our responsibilities under Section 106 and the ACHP's implementing regulations at 36 CFR 800. The FERC also consults with SHPOs pursuant to Section 101(b)(iii) of the NHPA and 36 CFR 800.3 through 800.6.

3.8.1 Results of Cultural Resources Survey

As part of its application, Entrega provided the FERC with its inventory reports and initial consultations with the Colorado and Wyoming SHPOs, the BLM, and Native American tribes. In addition, the application included Entrega's Monitoring and Unanticipated Discovery Plan. The inventory reports document the results of literature reviews, site file searches, cultural resources inventory, and test excavations for Entrega's proposed facilities in Colorado and Wyoming (Redman and Chandler 2004; Greiser 2004). The inventory reports are currently being reviewed by the FERC and the BLM.

The Colorado portion of the proposed pipeline route will measure 94.8 miles in length, of which 85.4 miles parallel existing pipelines, utilities, or road ROWs. Approximately 74.9 miles of the proposed route will parallel a previously inventoried pipeline. Where the proposed pipeline route parallels a previously inventoried pipeline, Entrega surveyed a 240-foot-wide corridor. The edge of the 240-foot-wide corridor was located 40 feet from the proposed centerline on the side with the existing pipeline and 200 feet from the centerline on the other side. The one exception was where Entrega paralleled the CIG Trailblazer Pipeline. Cultural resources investigations conducted in the 1980s for the Trailblazer Pipeline do not meet current inventory standards. Therefore, where Entrega paralleled the Trailblazer Pipeline (8 miles), a 300-foot-wide corridor centered on the staked centerline of the proposed pipeline route was surveyed. Where the proposed pipeline route did not parallel a previously inventoried pipeline, Entrega surveyed a 300-foot-wide corridor centered on the staked centerline of the pipeline route. In addition to the proposed pipeline route, Entrega surveyed 31.2 acres of temporary use areas that extend beyond the 240- to 300-foot-wide centerline inventory corridor, 28.7 miles (756 acres) of access roads, and 301 acres for aboveground facilities including compressor stations, meter stations, pipeyards, and contractor yards.

The Wyoming portion of the proposed pipeline route will measure 232.7 miles in length, of which 224 miles parallel existing pipelines and fiber optic ROWs. Approximately 123.3 miles of the proposed route will parallel a previously inventoried pipeline. Where the proposed pipeline route parallels a previously inventoried pipeline, Entrega surveyed a 250-foot-wide corridor. The edge of the 250-foot-wide corridor was located 40 feet from the proposed centerline on the side with the existing pipeline and 210 feet from the centerline on the other side. Where the proposed pipeline route did not parallel a previously inventoried pipeline, a 300-foot-wide corridor centered on the staked centerline of the pipeline route was surveyed. In addition to the proposed pipeline route, Entrega surveyed 263.9 acres of temporary use areas that extend beyond the 250- to 300-foot-wide centerline inventory corridor, 54.1 miles (324.9 acres) of access roads,

and 244.7 acres for aboveground facilities including compressor stations, meter stations, pipeyards, and contractor yards.

For both Colorado and Wyoming, a 100-foot-wide corridor was surveyed along each access road that may require blading and filling as a result of use by construction equipment and vehicles. For additional temporary workspace areas, compressor stations, meter stations, mainline valve sites, and other ancillary facilities, Entrega surveyed the footprint of each area plus a 100-foot-wide buffer zone. Four access roads and three extra workspaces remain to be surveyed in Colorado. Five segments of the pipeline corridor (totaling 15.5 miles) in Wyoming remain to be surveyed due to denied access.

Colorado

Surveys in Colorado located 73 cultural resource sites and 48 isolated finds. These include 40 previously recorded sites identified during the site file searches. The isolated finds and 33 of the sites are recommended or have been officially determined not eligible for listing on the NRHP. No additional investigation of these resources is recommended. Forty of the sites are recommended or have been officially determined eligible for the NRHP. Avoidance is recommended for these 40 sites (Redman and Chandler 2004). Entrega has recently provided information that indicates it currently would be able to avoid 20 of the 40 eligible sites by various methods, such as reroutes, bore, or crossing non-contributing segments of the sites. Entrega also has recently filed an addendum to the Class III cultural resource inventory of the Colorado segment of the proposed Entrega pipeline (Redman et al. 2005) for numerous reroutes and additional access roads, contractor/pipe yards, and extra workspace. The addendum report is currently under review by the BLM and FERC. Entrega continues to explore reroutes to avoid additional eligible sites. For those sites that cannot be avoided by rerouting the pipeline, Entrega also is investigating the possibility of avoiding these sites through other means, including boring and directional drilling. Treatment plans for those eligible sites that cannot be avoided would be filed with the Commission after Entrega has received all agency comments on the inventory and testing reports for the project and determinations of eligibility have been made by the agencies for all sites located within the area of potential effects (APE).

An additional 62 sites are thought to be present in the pipeline corridor based on file search data. Of these, 10 are recommended or have been officially determined eligible for the NRHP, 41 sites are recommended as needing additional data, and 11 sites are recommended or have been officially determined not eligible for the NRHP. Entrega proposed testing be conducted at 42 of the potentially eligible and eligible sites, and sites needing additional data, to determine whether they extend into the Entrega pipeline corridor and to evaluate their research potential. Testing was not proposed at the ineligible sites or at those sites that previously had been subjected to data recovery. At this time, the testing of four sites has been completed with negative results. Entrega has indicated that it would file an addendum report of the results of the testing in February 2005.

The BLM has recommended open trench inspection along the entire extent of the pipeline route in northwestern Colorado (MPs -0.5 to 85.7). The recommendation is based on the potential for prehistoric and historic-period cultural materials to occur in depositional environments.

Wyoming

Surveys in Wyoming located 147 cultural resource sites and 62 isolated finds. These include 103 previously recorded sites identified during the site file searches. The isolated finds and 98 of the cultural resources are recommended or have been officially determined not eligible for listing on the NRHP. No further investigations are recommended for these resources. Forty-nine of the cultural resources are recommended or have been officially determined as eligible for listing on the NRHP. Avoidance is recommended for 18 of the 49 cultural resource sites recommended or officially determined eligible for the NRHP (Greiser 2004). Entrega has recently provided information that indicates it currently would be able to avoid 40 of the 49 eligible sites by various methods, such as reroutes, bore, or crossing non-contributing segments of the sites. Several segments of five NRHP-eligible historic linear sites (Cherokee Trail, Overland Trail, Old Union Pacific Railroad Grade, Lincoln Highway, and Rawlins-Baggs Road) would be crossed by the proposed Entrega pipeline; however, not all of the segments contribute to the site's overall NRHP eligibility. Adverse effects to those segments that contribute to the site's eligibility would be avoided by boring under the segments. Entrega plans to file an addendum Class III inventory report with the Commission that presents the results of the surveys of reroutes designed to avoid the eligible sites. Entrega continues to explore reroutes to avoid additional sites. For those sites that cannot be avoided by rerouting the pipeline, Entrega also is investigating the possibility of avoiding these sites through other means, including boring and directional drilling. Treatment plans for those eligible sites that cannot be avoided would be filed with the Commission after Entrega has received all agency comments on the inventory and testing reports for the project and determinations of eligibility have been made by the agencies for all sites located within the APE.

A total of 72 previously recorded sites were not relocated during the cultural resources surveys. Sixty of the sites are presumed destroyed or possibly plotted incorrectly. Of the remaining 12 sites, 11 are presumed buried and 1 is unevaluated. Entrega has recommended additional testing at six of the sites and open trench inspection for the other six. Although these 12 sites could not be relocated during surveys, previous investigations have demonstrated that the sites have the potential to contain buried features.

Approximately 30 miles of the pipeline corridor are recommended for open trench inspection or construction monitoring by a qualified archaeologist during the construction phase. These locations correspond with site areas and topographic locations along the centerline where there is an increased potential for shallowly buried site deposits, deeply buried sites, or isolated subsurface features.

3.8.2 Native American Consultation

Entrega sent initial consultation letters to 18 Native American tribes on April 14, 2004. The letters described the project and provided the tribes with the opportunity to comment on the project and identify sites or places that might be of religious or cultural significance to the tribes. Entrega also has conducted telephone follow-ups with the tribes. To date, 13 of the tribes have responded. **Table 3.8-1** lists the Native American tribes that have been contacted and summarizes concerns they have raised. Entrega has indicated that they are working with the various Native American tribes and intend to continue consultation throughout the environmental review and construction phase of the project. In addition, the FERC sent the NOI to these same tribes. No responses have been received to date.

Table 3.8-1
Native American Consultations for the Entrega Pipeline Project

Tribe	Date	Status
Apache Tribe of Oklahoma	01/10/05	Tribe requested copy of survey reports and to be notified if cultural resources are found.
Cheyenne & Arapaho Tribes of Oklahoma		Still reviewing consultation letter.
Cheyenne River Lakota Tribe	07/07/2004	Tribe has no comments/concerns at this time.
Comanche Tribe of Oklahoma	None[1]	
Crow Creek Lakota Tribe		Still reviewing consultation letter.
Crow Tribe	None[1]	
Eastern Shoshone Tribe	05/19/2004	Tribe requested copy of survey reports. No other comments at this time.
Jicarilla Apache Tribe	04/26/2004	Tribe has no interest in the project.
Kiowa Tribe of Oklahoma	07/07/2004	Tribe would like to be notified if cultural resources are found.
Northern Arapaho Tribe	07/13/2004	Tribe has no interest in the project.
Northern Cheyenne Tribe	05/18/2004	Tribe requested meeting with BLM or FERC to discuss the project.
Northern Ute Tribe	None[1]	
Oglala Lakota (Sioux) Tribe	07/22/2004	Tribe has no interest in the project.
Pawnee Nation of Oklahoma	04/26/2004	Tribe has no interest in the project.
Rosebud Lakota Tribe (same as Rosebud Sioux Tribe)	07/07/2004	Tribe has no comments/concerns.
Southern Ute Indian Tribe	11/04/2004	Tribe did not object to the project.
Standing Rock Lakota Tribe	05/25/2004	Tribe has no interest in the project.
Ute Mountain Ute Tribe	None[1]	

[1] To date, no response has been received.

3.8.3 Construction and Operational Impacts

Project impact or effects include not only the physical disturbance of an historic property, but also may include the introduction, removal, or alteration of various visual or auditory elements, which could alter the traditional setting or ambience of the property. In consultation with the Colorado and Wyoming SHPOs and the BLM, the FERC would determine whether construction of the proposed project would affect any properties listed on, or eligible for listing on, the NRHP. If a property would be adversely affected, mitigation would be proposed. Mitigation may include, but not be limited to, one or more of the following measures: 1) avoidance through the use of realignment of the pipeline route, relocation of temporary extra workspace, or changes in the construction and/or operational design; 2) data recovery, which may include the systematic professional excavation of an archaeological site or the preparation of photographic and/or measured drawings documenting standing structures; and 3) the use of landscaping or other techniques that would minimize or eliminate effects on the historic setting or ambience of standing structures.

Cultural resources surveys still need to be completed for four access roads and three extra workspaces in Colorado. To date, there are 33 sites that are recommended or officially determined not eligible for the NRHP, requiring no further work, while 40 sites are recommended or officially determined eligible for the NRHP. Avoidance is recommended for the 40 eligible sites. Entrega indicates it would currently be able to avoid 20 of these sites, and that it continues to explore reroutes designed to avoid additional eligible sites. Treatment would be proposed for those eligible sites that cannot be avoided. An additional 42 potentially eligible or eligible sites are presumed buried. Testing would be conducted at these sites to determine whether they extend into the Entrega pipeline corridor and to evaluate their research potential.

Cultural resources surveys still need to be completed for 15.5 miles of pipeline corridor in Wyoming. To date, 98 sites are recommended or officially determined not eligible for the NRHP, requiring no further work, while 49 sites are recommended or officially determined eligible for the NRHP. Entrega indicates it would currently be able to avoid 40 of the 49 sites, and that it continues to explore reroutes designed to avoid additional eligible sites. Treatment would be proposed for those eligible sites that cannot be avoided. Twelve previously recorded sites could not be relocated during the surveys. Previous investigations have demonstrated that these sites have the potential to contain buried features. Evaluative testing is recommended for six of the sites and open trench inspection is recommended for the remaining six sites.

The process of fully complying with Section 106 of the NHPA has not yet been completed for the EPP. Surveys and evaluative testing have not been completed and reroutes to avoid eligible sites have not been finalized. Once evaluations are complete and it has been determined which sites can or cannot be avoided, the FERC, in consultation with the BLM and SHPOs, would make final determinations of NRHP eligibility and project effects. If historic properties would be adversely affected, a treatment plan to mitigate any adverse effects would be prepared in consultation with the appropriate parties. Once a treatment plan is approved, Entrega would implement the specified treatment measures before notice to proceed with project construction is authorized in any given area. Implementation of treatment would occur only after certification of the proposed project. The FERC would ensure that treatment is carried out.

To ensure that the FERC's responsibilities under the NHPA and its implementing regulations are met, **we recommend that:**

- Entrega defer construction and use of facilities and staging, storage, and temporary work areas and new or to-be-improved access roads until:

  a. Entrega files with the Secretary all remaining cultural resource inventory and evaluation reports, and necessary avoidance or treatment plans;

  b. Entrega files with the Secretary the BLM's and the Colorado and Wyoming State Historic Preservation Offices' comments, as applicable, on all reports and plans; and

  c. the Director of OEP reviews and approves all reports and plans and notifies Entrega in writing that it may proceed.

- All material filed with the Commission that contains location, character, and ownership information about cultural resources must have the cover and any relevant pages therein clearly labeled in bold lettering: "CONTAINS PRIVILEGED INFORMATION – DO NOT RELEASE."

3.9 Socioeconomics

3.9.1 Population

In 2000, the population of Colorado was 4,301,261 and the population of Wyoming was 493,782. In part due to energy development activities, Colorado's population climbed by 5.8 percent to 4,550,688 in 2003, with Wyoming's population increasing by 1.5 percent to 501,242 (U.S. Census Bureau 2004). The five counties that would be crossed by the western and central portions of the proposed pipeline route are largely rural, generally with a single population center in proximity to the route. The three counties crossed by the eastern portion of the route, Laramie, Larimer, and Weld, also are relatively rural but more urbanized, with each having one or more metropolitan centers. Garfield and Routt Counties in northwestern Colorado though not directly affected by the proposed route, border Rio Blanco and Moffat Counties, and thus may experience indirect or secondary effects from the proposed project.

The least populus county crossed by the proposed pipeline route is Rio Blanco County, Colorado, which had a population of 5,986 in 2000. The most populated county that would be crossed by the proposed pipeline route is Larimer County, Colorado, which had a population of 251,494 in 2000. A majority of the population in Larimer County is centered around Fort Collins, Colorado, which is about 30 miles southwest from the proposed terminus at the Cheyenne Hub Metering Station. **Table 3.9-1** describes population and recent population change for the proposed project area.

Table 3.9-1
Population

County	2000	2003	Change, 2000 to 2003	
			Absolute	Percent
Albany, WY	32,014	31,887	(127)	-0.4
Carbon, WY	15,639	15,302	(337)	-2.2
Laramie, WY	81,607	84,083	2,476	3.0
Sweetwater, WY	37,613	37,018	(595)	-1.6
Garfield, CO	43,791	47,611	3,820	8.7
Larimer, CO	251,494	266,610	15,116	6.0
Moffat, CO	13,181	13,527	346	2.6
Rio Blanco, CO	5,986	5,938	(48)	-0.8
Routt, CO	19,690	20,788	1,098	5.6
Weld, CO	180,862	211,272	30,410	16.8

Source: U.S. Census Bureau, Population Division 2004.

Larimer and Weld Counties each experienced substantial population growth over the past 3 years, though much of the growth in Weld County occurred in the southern portion of the county, and is tied to the northward expansion of the Denver metropolitan area. The three rural counties in northwestern Colorado also have seen population gains, particularly Garfield County located just south of Rio Blanco County and the site of substantial energy exploration and development activity in recent years. Population changes in

Wyoming have been relatively limited in scale, with three of the four counties losing population between 2000 and 2003.

Potential impacts to the existing socioeconomic environment of the proposed project area would be primarily due to the relatively large-scale, temporary influx of construction workers, and to a much lesser extent the additional operation personnel. Entrega anticipates approximately 2,000 to 2,200 construction personnel would be employed during the summer and fall of 2005 to complete the project. Construction personnel would consist of Entrega employees, contractor employees, construction inspection staff, and environmental inspection staff. Entrega is planning to build the pipeline in four spreads, with construction activity occurring simultaneously in each spread. The applicant anticipates between 425 and 550 construction and inspection personnel associated with each spread. In addition, seven meter stations would be built, one at the Meeker Hub Compressor Station, two near Wamsutter and four at the Cheyenne Hub Metering Station. Construction of the meter stations would require 50 to 75 workers for a relatively short period, (estimated to be 3 to 5 weeks per station). Entrega anticipates about 100 individuals across the project to be involved in material transportation and unloading. At this time, Entrega has proposed to commence construction of the pipeline and meter stations in June 2005 (two spreads beginning in June, with construction starting on the remaining two spreads 1 month later). Each spread would require 4 to 6 months to complete, with all work to be completed by the end of the year. The construction timetable for the meter stations has not been specified.

Construction of each compressor station would require approximately 125 to 175 additional workers. Entrega has proposed to commence construction of the three compressor stations beginning in August 2006. The estimated duration of construction ranges from about 8 to 18 weeks for the three compressors. During that period, personnel would work during daylight hours.

The staggered commencement of construction, brief duration of activity associated with the meter stations and scheduled construction of the compressors in 2006 yields a peak workforce of about 2,100 workers for a 4-month period in 2005, with substantially lower workforce requirements in June, November and December. Entrega's proposed construction plan is for Spreads 2 and 3 to commence at Wamsutter and move south and east, respectively. Spread 1 may involve smaller crews working at multiple locations simultaneously, while Spread 4 would commence near Cheyenne and move westward. Based on the upper-end of Entrega's anticipated workforce requirements, a short-term peak upwards of 700 direct employees would occur in 2006, with an average of about 350 jobs for the remainder of the time (**figure 3.9-1**).

Entrega, through its construction contractors and subcontractors, would attempt to hire temporary construction staff from the local population, i.e., currently residing in nearby areas of Colorado and Wyoming such that would not relocate and impose additional demands on housing. It is anticipated that up to 10 percent of the total construction workforce could be hired locally in the western portion of the project (i.e., Spreads 1, 2, and 3 and the three meter stations). The remaining 90 percent (approximately 1,500 workers at the peak) would include non-local personnel. Note that the local/non-local status could change for some workers as the specific location changes. For example, residents of Rock Springs employed on Spread 2 may initially commute, but then relocate to Craig temporarily as the project construction moves southward.

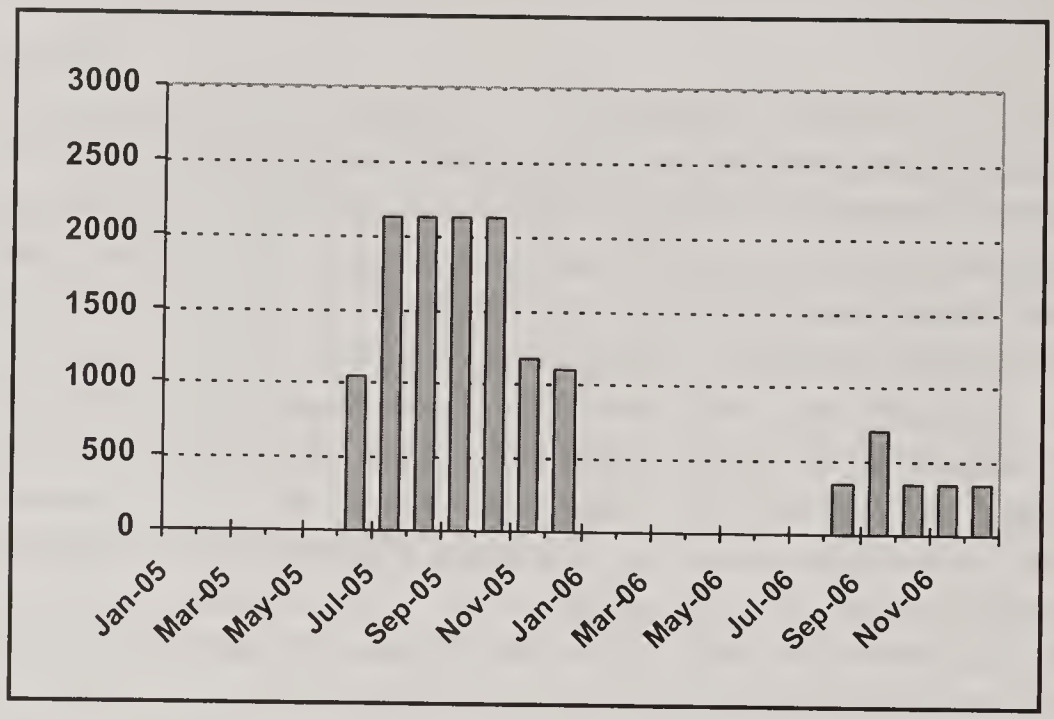


Figure 3.9-1. Projected Construction Workforce – Entrega Pipeline Project

Local hiring for Spread 4 and the four meter stations at the Cheyenne Hub Metering Station would likely be higher (i.e., 20 to 25 percent) due to the larger labor force and diminished competition in the four counties in the eastern portion of the proposed route. Non-local workforce requirements could be as high as 460 workers.

In 2006, local hiring associated with construction of the compressors could be as high as 35 percent, the increase primarily a function of the smaller scale workforce.

Environmental inspection staff would likely consist entirely of non-local employees based on the specialized skills and experience required for the job.

Population impacts from the influx of temporary construction and inspection personnel would be temporary and dispersed across the proposed route. Due to the temporary and transitory nature of the work, most non-local workers would not be accompanied by spouses, other family members or nonfamily partners. Thus, the overall population impact would be only slightly higher than the number of workers (i.e., 20 to 40 percent). Nevertheless, the population impacts in the smaller communities would be moderate.

It is estimated that six to eight permanent employees would be required to oversee the operation and maintenance of the pipeline, including the compressor stations and other aboveground facilities. These employees would most likely be hired from outside the local labor force, as they would have specialized responsibilities or have current employment with Entrega, but then would establish residency in communities near the proposed project route. No additional personnel would be hired to operate and maintain the compressor stations as these facilities would be constructed to operate automatically. Any specific operation and maintenance task which cannot be completed by Entrega's staff would be completed

on a contractual and as-needed basis. Given the small number of permanent workers, secondary employment effects would be limited. Thus, the project would not have a significant long-term impact on the permanent population.

3.9.2 Employment and Economics

Based on data from the Colorado Department of Labor, the four counties crossed by the proposed pipeline route account for approximately 11 percent of the statewide civilian labor force, though most of that is in the central and southern portion of Larimer and Weld Counties that are some distance from the proposed project location. Moffat and Rio Blanco Counties both have relatively small scale labor forces, 6,783 and 3,678, respectively. In Wyoming, approximately 36 percent of the civilian labor force resides within the four counties that would be crossed by the proposed pipeline route. Carbon County has the smallest civilian labor force with 8,156 persons, and Laramie County has the largest civilian labor force with a total of 44,291 persons.

Unemployment rates across the project area have declined over the past year, ranging from 1.7 percent in Albany County to 5.8 percent in Weld County in August 2004 (Wyoming Department of Employment 2004; Colorado Department of Labor and Employment 2004). Statewide unemployment rates for the same period were 4.9 percent in Colorado and 3.0 percent in Wyoming. Unemployment rates are generally higher in those counties that experienced the strongest population growth in recent years (**table 3.9-2**). Given the limited size of the local labor force in the more rural counties, the number of available workers is very low, for example, 122 unemployed in Rio Blanco County and 243 unemployed in Carbon County.

Table 3.9-2
Labor Market Conditions, August 2004

County	Labor Force	Employed	Unemployed	Unemployment Rate
Albany, WY	18,497	18,182	315	1.7%
Carbon, WY	8,156	7,913	243	3.0%
Laramie, WY	44,291	42,565	1,726	3.9%
Sweetwater, WY	20,829	20,277	552	2.7%
Garfield, CO	28,379	27,696	683	2.4%
Larimer, CO	160,685	153,375	7,310	4.5%
Moffat, CO	6,783	6,437	346	5.1%
Rio Blanco, CO	3,678	3,556	122	3.3%
Routt, CO	12,462	12,167	295	2.4%
Weld, CO	105,308	99,193	6,115	5.8%

Sources: Colorado Department of Labor and Employment 2004; Wyoming Department of Employment 2004.

In northwestern Colorado, the primary employment sectors of the counties crossed by the proposed pipeline route are agriculture, oil and gas development, trade and construction, while mining (both mineral and oil and gas development) education, health, public administration, trade and tourism/travel are the primary

employment sectors in Wyoming. The latter is due in part to the I-80 corridor across southern Wyoming. The two eastern Colorado counties have relatively diversified economies, including higher education, more typical of metropolitan areas.

In 2002, per capita personal income was $33,723 in Colorado and $31,021 in Wyoming. In Colorado, the four counties traversed by the proposed pipeline route have per capita incomes ranging from $24,136 in Moffat County to $27,439 in Routt and $31,420 in Larimer County. In Wyoming, the counties traversed have per capita incomes that are all below the statewide average. Among Wyoming counties, Carbon County has the lowest per capita income at $25,432 and Laramie County has the highest at $30,949 (U.S. Bureau of Economic Analysis 2004).

Local businesses would benefit from demands for goods and services generated by the temporary construction workforce. In addition to the personal earnings of local temporary employees, estimated spending based on Entrega's workforce estimates and daily spending assumptions totals approximately $24 million during Phase I and $3 million during Phase II. Benefits would accrue to many establishments across the entire proposed route, although Carbon County, Wyoming, would benefit the most, because it is expected to host the single largest share of nonlocal workers as well as contractor staging areas and pipe yards. Beneficial impacts on local businesses during Phase II would be concentrated in the western portion of the project area due to the locations of the proposed compressor stations, with Moffat County realizing the largest benefits.

In addition, local purchases for materials necessary with the EPP would be made. Entrega estimates that local purchases made by personnel associated with the construction of the EPP would primarily include consumables, fuel, and miscellaneous construction-related materials (e.g., office supplies). The costs estimated for the entire project related to materials are:

- Diesel fuel = $3 million
- Gasoline = $1.5 million
- Miscellaneous lumber, consumables, office supplies = $200,000

The economic stimulus provided by the project would result in temporary secondary impacts on employment as local establishments add staff or increase hours worked by existing staff to accommodate the increases in demand. Long-term construction projects may generate between 0.7 and 1.1 additional jobs for each direct job associated with the project. However, given the temporary nature of the EPP and the changing location of activities, the secondary impacts would be expected to be on the order of about 0.35 jobs, 744 jobs total, across the entire project.

Construction and operation of the project would have beneficial impacts on local sales and lodging tax revenue. Based on the estimated retail purchases by temporary workers and current sales tax rates, additional sales and lodging taxes during Phase I would be about $561,000 in Wyoming and $364,000 in Colorado. About 66 percent of the Wyoming total would accrue to the state, the remainder to various county and municipal governments. In Colorado, about 41 percent would accrue to the state, the remainder to local governments. During Phase II, the additional totals are estimated at $75,000 in Wyoming and $49,000 in Colorado, with similar distributions of the accruals to state and local governments. Additionally, Entrega

would pay sales tax for the lease and/or rental of various office and construction equipment and space for FOs and the storage of construction equipment.

Of greater significance to state and local revenues would be the sales or use taxes on pipe and other materials and installed equipment associated with the project. Such purchases are subject to sales tax if the items are manufactured in-state, or use tax when purchased outside the respective states and imported into state. Typically project owners and contractors are entitled to a credit for taxes paid in another jurisdiction (e.g., the point of purchase or manufacture), but generally have an option to specify the point of delivery as the location for purposes of taxation. All four Wyoming counties impose a use tax, as does Rio Blanco County. Moffat County does not impose a use tax. Entrega's estimated sales/use tax obligation, based on current tax rates and assuming it exercises the option for local taxation, is $11.4 million in Wyoming and $3.5 million in Colorado for Phase I. Corresponding tax revenues for Phase II are $1.4 million in Wyoming and $1.3 million in Colorado. In Wyoming about 80 percent of the total would accrue to the state, the remainder distributed among the counties based on the value of installed materials and equipment. The distribution in Colorado would be about 75 percent to the state and 25 percent to Rio Blanco County.

During construction Entrega anticipates that total payroll for the project would be about $176 million (approximately two-thirds associated with construction in Wyoming and one-third in Colorado). Estimated payroll for Phase I is $162 million (92 percent of the total), with $14 million in added payroll in Phase II. Individual workers who are Colorado residents, or who work in Colorado on a temporary basis would incur an income tax liability on those earnings. This would temporarily increase the tax revenue for the state, although the increase would be relatively small.

Long-term income associated with Entrega's operational workforce and the wages and salaries are not quantified, but would be relatively small in comparison to the construction payroll.

3.9.3 Housing

Housing availability across the project area is a function of the housing stock, recent economic and population growth, the inventory of short-term lodging accommodations, such as recreational vehicle (RV) parks and hotel and motel rooms, and demand for housing from other sources. In 2000, the total housing supply ranged from 2,855 units in Rio Blanco County to 105,392 units in Larimer County. Carbon County registered a total housing supply of 8,307 units (**table 3.9-3**).

A key indicator of housing availability to meet short-term needs is the number of available rental units. Among the rural counties in the western portion of the project area the number of such units recorded in the 2000 Census ranged from 127 units in Rio Blanco to 680 units in Sweetwater County. In the case of the latter, most of those units were in Rock Springs or Green River, a considerable distance from the proposed route. A larger number of rental units were available in the more urban communities in the eastern portion of the proposed route.

Relatively little new residential construction, a combined 561 total units permitted, has occurred in Rio Blanco, Moffat, Carbon, and Sweetwater Counties since the 2000 Census (U.S. Census Bureau 2004; Colorado Division of Local Government 2004; and Wyoming Department of Administration and Information

2004). Significant new construction has occurred in all the other counties, including 824 new units in Albany County, 1,876 units in Garfield County, and 1,821 units in Laramie County. Most of the new housing units were single-family residences.

Table 3.9-3
Housing Assessment, November 2004

County	Total Units – 2000	Available Rental Units – 2000	Building Permits 2000 – 2003
Albany, WY	15,215	353	824
Carbon, WY	8,307	360	131
Laramie, WY	34,213	823	1,821
Sweetwater, WY	15,921	680	190
Garfield, CO	17,336	217	1,876
Larimer, CO	105,392	1,342	13,272
Moffat, CO	5,635	189	180
Rio Blanco, CO	2,855	127	60
Routt, CO	11,217	956	1,359
Weld, CO	66,194	826	6,115[1]

[1]Includes only the unincorporated county and City of Brighton, excludes Greeley and other municipalities.

Sources: U.S. Census Bureau 2004; Colorado Division of Local Government 2004; Wyoming Department of Administration and Information 2004.

A second critical component of local housing markets is the inventory of short-term accommodations. Such accommodations include RV spaces, motel and hotel rooms and mobile home spaces. In some instances, recreational cabins and seasonal housing for migratory workers also may be available. With the exception of Rio Blanco County with 404 units, the inventory of such accommodations is relatively large in most of the counties because tourism, travel, and outdoor recreation play major roles in the local economies (**table 3.9-4**).

The short-term accommodations tend to be geographically concentrated in the largest communities in each county, although there are some RV parks and smaller motels in outlying communities, particularly along the I-80 corridor in Carbon County.

Vacancy surveys of rental housing in Wyoming indicate limited availability across the study area, with estimated vacancy rates ranging from under 1.0 percent in Sweetwater County to 8.4 percent in Carbon County. However, even the latter represents only about 50 units. (Wyoming Housing Database Partnership 2004). Similar surveys for Larimer and Weld Counties in eastern Colorado indicate substantially improved availability, with vacancy rates of over 11.0 percent. (Colorado Department of Local Affairs 2004). Vacancy rates for rental housing are not reported for rural Colorado, but anecdotal reports suggest limited availability in many communities, although housing is reportedly more available in the Craig area following the recent completion of a major retrofit project at the nearby powerplant. Anecdotal information also indicates limited

Table 3.9-4
Estimated Temporary Housing Inventories

	RV Spaces	Motel/Hotel Rooms	Mobile Home Spaces	Total	Temporary Housing Availability
Albany, WY	181	1,074	1,237	2,492	Fair
Carbon, WY	395	1,367	2,583	4,345	Limited
Laramie, WY	490	2,407	2,297	5,194	Fair
Sweetwater, WY	215	1,718	3,696	5,629	Limited
Garfield, CO	196	>1,000	NA	>1,196	Very Limited
Larimer, CO	375	1,877	NA	2,252	Good
Moffat, CO	221	600	858	1,679	Fair to Good
Rio Blanco, CO	108	143	153	404	Very Limited
Routt, CO	105	>1,000	NA	>1,105	Good
Weld, CO	115	678	614	1,407	Good
Totals	**2,401**	**11,864**	**11,438**	**25,703**	

Note: RV spaces exclude some or all spaces in national forest and state park campgrounds. Only some, unknown number, of the mobile home spaces are available at any one time and may not be available for short-term use.

Sources: Appendix 5A – EPP, Pedersen Planning Consultants 2004; various community/tourism promotion websites; T.L. Enterprises 2004.

availability of short-term lodging across most of the western portion of the study area, particularly in Sweetwater and Rio Blanco Counties, due to ongoing energy resource development and seasonal tourism and hunting demand. Temporary housing availability is relatively better in the eastern counties which generally have larger inventories of rooms and spaces and are not experiencing the comparable levels of competing demand from ongoing energy resource development. Given the above, housing availability can be characterized as limited to very limited in the western counties and fair to good in the eastern counties.

The project construction period would be relatively short and most non-local workers likely would be unaccompanied during their work tenure on the project. Consequently, it is expected that most project workers would use temporary housing, such as hotels/motel, RV parks, and campgrounds. Some workers would likely resort to renting furnished apartments and homes, due to availability constraints of other accommodations, though this is generally less preferable due to landlord and property management company preferences for extended term commitments. Most of the temporary workers would seek housing in the more populated, service-oriented towns located within a reasonable commuting distance to the work site. As the more convenient options fill, workers would seek alternatives, driving further, looking at smaller communities, even using campgrounds on the national forests or at state parks despite the fact that those sites have 14-day stay limits. Furthermore, some individuals may desire to relocate during the term of the project as the active activity area in each spread moves along the corridor. The net effect of these factors is that the temporary housing demand would be dynamic. An assessment of the temporary housing demands, based on the local/nonlocal hiring assumptions outlined above, the locations and driving distances involved

and the availability of temporary housing yielded the temporary housing demand profile shown in **table 3.9-5**.

Table 3.9-5
Projected Temporary Housing Requirements, Selected Months, 2005

	Projected Non-Resident Workers			Percent Distribution, By Month		
	June	August	November	June	August	November
Albany, WY	14	254	254	1%	14%	25%
Carbon, WY	191	695	520	20%	37%	52%
Laramie, WY	14	94	136	1%	5%	14%
Sweetwater, WY	142	142	-	15%	8%	0%
Garfield, CO	144	144	9	15%	8%	1%
Moffat, CO	239	239	-	25%	13%	0%
Rio Blanco, CO	158	158	-	17%	8%	0%
Routt, CO	41	41	-	4%	2%	0%
Larimer, CO	-	40	52	0%	2%	5%
Weld, CO	-	20	26	0%	1%	3%
Total	**943**	**1,861**	**997**	**100%**	**100%**	**100%**

Source: Sammons/Dutton LLC. 2004.

Temporary housing demand is projected at 943 units in June, when Spreads 1 and 2 are active, nearly doubling to 1,861 units in August and then abating to 997 units in November. Demand would initially be heaviest in Moffat, Rio Blanco, and Carbon Counties. Availability constraints in Rio Blanco and possibly Moffat Counties are likely to result in some commuting from nearby locations in Routt and Garfield Counties. When construction activity on all four spreads and one or more of the meter stations is occurring, strong housing demand would continue in Moffat County, however, temporary demand would increase to 695 units in Carbon County and 254 units in Albany County. In Carbon County, demands for temporary housing are likely to spillover from Rawlins to smaller, outlying areas like Saratoga, Hanna, and Elk Mountain. The temporary housing demands associated with the project would compete with summer tourism and fall hunting demands across much of the region. Consequently, though for relatively short-duration, some smaller communities would experience extremely tight market conditions for temporary housing. The larger communities, particularly Laramie, Cheyenne, and Fort Collins have adequate capacity to meet the needs.

Housing requirements for the operation and maintenance of the pipeline would be minimal. Sufficient permanent housing is available within or near the project area for the estimated six to eight full-time Entrega employees.

3.9.4 Public Services and Facilities

Table 3.9-6 outlines selected public services and facilities serving the proposed project area. In general, the public services available are functions of the size and population of the county and the numbers of larger communities in the county. Law enforcement is provided by multiple providers including the respective state

patrols, county sheriffs and local police departments. In many instances, mutual aid/cooperative agreements among agencies allow members of one agency to provide support or backup to the other agencies in emergency situations.

Table 3.9-6
Existing Public Services and Facilities

State/County	Police/Sheriff Departments[1]	Fire Departments[2]	Medical Facilities[3]
COLORADO			
Rio Blanco	3	2	2 Hospitals
Moffat	2	2	1 Hospital
Larimer	5	13	3 Hospitals
Weld	15	19	1 Hospital
WYOMING			
Sweetwater	4	9	1 Hospital
Carbon	7	8	1 Hospital
Albany	2	4	1 Hospital
Laramie	4	9	2 Hospitals

[1] Capitolimpact.com. http://www.captiolimpact.com, accessed 10/08/03. Does not include special law enforcement units for universities.
[2] Firehouse Network. http://www.fire-ems.net, accessed 10/13/03. Includes volunteer, district, city, and town departments, but does not include departments and services offered by the BLM or the Department of Defense.
[3] Colorado Health and Hospital Association. http://www.cha.com/Hospitals/hospitals.shtml, accessed 10/13/03. Wyoming Hospital Association. http://www.wyohospitals.com/find.html, accessed 10/13/03.

A network of fire departments and districts provide fire protection and suppression services across the region. Many of the fire districts across the region are staffed by volunteers and are housed in stations located in the larger communities. Together, these factors can increase response times to incidents. Federal land management agencies also maintain wild land and forest fire suppression capabilities in the region, though these capabilities are not generally staffed for quick response dispatch.

At least one acute care hospital is operating in each county crossed by the proposed route, providing emergency medical care and in several cases also serving as the base for local emergency medical response and transport services. As in the case of fire suppression, response times to highway or construction-related accidents in parts of the proposed route may be lengthy given communication, dispatch and travel time considerations.

Higher level trauma centers capable of treating serious injuries requiring more specialized or intensive care are located in Rock Springs and each of the four eastern counties in the study area; Albany, Laramie, Larimer, and Weld. The most serious injuries may require transport to regional trauma centers in Grand Junction, Colorado and Casper, Wyoming or even to Denver or Salt Lake City. The regional trauma centers all provide emergency medical air transport, via either helicopter or fixed wing aircraft, with airports capable of accommodating fixed-wing aircraft located in Rifle, Meeker, Craig, Rawlins, and Rock Springs.

Construction of the pipeline could result in minor, temporary impacts on local facilities and services, including law enforcement, fire and medical services. As highlighted by the Rio Blanco Sheriff during public scoping, lengthy emergency medical response times are of particular concern in the more remote stretches of the proposed pipeline route. To address these concerns, Entrega has drafted an on-site ERP, which includes the formation of emergency response teams for the project (Entrega 2004g). The ERP would be provided to the BLM, Colorado and Wyoming Departments of Transportation and the FERC upon completion.

Other construction-related impacts on local services may include increased demand for permits for vehicle load and width limits and local police assistance during construction at road crossings to facilitate traffic flow. Entrega would work with the local law enforcement, fire departments, and emergency medical services to coordinate for effective emergency response. The degree of impact would vary from community to community depending on the number of non-local workers and accompanying family members that temporarily reside in each community, the duration of their stay, and the size of the community. Although these factors are too indeterminate and variable to accurately predict the magnitude of impact, the effects would be short term and therefore not expected to be significant.

The limited number of permanent employees associated with the proposed project would result in negligible long-term impacts on public services.

3.9.5 Public Sector Fiscal Resources

Local municipal governments, school districts and some other government-funded entities rely heavily on property and sales tax revenues to fund their ongoing operations. **Table 3.9-7** lists the 2003 total assessed valuation from all sources and estimated gross retail sales of all establishments. Note that the values for

Table 3.9-7
County Property and Sales Tax Base

	Assessed Valuation 2003	Gross Retail Sales (Estimated)
Albany, WY	208,799,630	422,378,000
Carbon, WY	382,269,728	344,978,000
Laramie, WY	538,688,179	1,221,269,000
Sweetwater, WY	1,160,741,992	1,073,949,000
Garfield, CO	923,800,470	1,243,843,000
Larimer, CO	3,108,530,290	5,725,901,000
Moffat, CO	298,876,180	226,378,000
Rio Blanco, CO	304,607,460	169,443,000
Routt, CO	687,473,320	591,417,000
Weld, CO	2,487,423,740	4,061,799,000

Note: Retail sales for Wyoming are Fiscal year 2004, those for Colorado are for calendar year 2003.

Sources: Wyoming Department of Administration and Information 2004; Wyoming Taxpayers Association 2004; Colorado Division of Local Affairs 2004.

Wyoming and Colorado counties are not directly comparable due to differences in property assessment practices, but comparisons between counties within a state reflect differences in the scale of development and natural resource wealth. For instance, assessments on mineral production account for about 63 percent of the total assessed valuation in Carbon and Sweetwater Counties and 76 percent of Rio Blanco County's total. Other state-assessed property, including utilities and oil and gas transmission systems account for 48 percent of the total valuation in Moffat County and between 10 and 13 percent of the total in Albany, Carbon, Sweetwater, Rio Blanco, Routt and Weld Counties. Statewide total assessed valuation on gas transmission pipelines in 2003 was $121.7 million in Wyoming and $255.6 million in Colorado. Residential, commercial and industrial development are the primary constituents of the tax base in the more urban counties including Albany, Laramie, Larimer, Weld, and Routt Counties. The latter is included as a result of the extensive resort development in and around Steamboat Springs.

Gross annual retail sales reflect a locality's population, income, the level of travel and tourism in the region, the presence of special populations such as a college or university, and the economic stimulus provided by special activities such as construction projects and energy and mineral resource development. Both states, all of the counties but Weld, and many of the communities within the counties levy sales taxes on retail purchases. Based on total annual gross retail sales, Rio Blanco and Moffat Counties have the smallest trade and service sectors of all the counties crossed by the proposed project while Weld and Larimer Counties have the largest. As reflected in **table 3.9-7**, the range extends between $169.4 million (Rio Blanco County) and $5.7 billion (Larimer County).

During operation of the pipeline, Entrega would pay property/ad valorem taxes to local governments crossed by the proposed pipeline. In Wyoming, those payments would include taxes associated with a mandatory statewide levy to help support public education. Transmission lines are centrally assessed by the state, with the total valuation then allocated among the local counties based on their respective shares of the installed pipelines and facilities. Initially the cost of construction provides a reasonable proxy for the assessed valuation of gas transmission systems. Over time, the assessment focuses more on the respective facility's contribution to system-wide income and depreciated value, generally resulting in lower assessment. Hence, the aggregate assessed valuation of gas transmission systems (327.5 miles of pipeline and corresponding compressors and other equipment) in Colorado and Wyoming in 2003 was just over $377 million, with an corresponding pre-assessed value of $1.9 billion. For this analysis, it is assumed that the long-term assessment would decline to 40 percent of the initial construction cost. **Table 3.9-8** summarizes the projected assessed valuation and corresponding annual property taxes, by county, directly associated with Entrega's proposed pipeline.

Initially, the estimated aggregate assessed valuation would be about $102.9 million. Of that sum, 46 percent would be in Wyoming and 54 percent in Colorado. Total annual property taxes levied on those assessments are projected at nearly $6.0 million. Over time, the total assessed value is anticipated to decline to $41.1 million and the annual property taxes paid to $2.4 million. The ongoing revenues, given the relatively low demands on public services and facilities would be a significant benefit associated with the project.

Tax revenues are typically used by local and state governments for infrastructure improvements such as roads, schools, and health facilities, and to meet other needs of the community.

Table 3.9-8
Projected Assessed Value and Annual Property Taxes, by County

	Assessed Valuation		Property Tax Mill Levy[3]	Annual Property Tax	
	Initial Construction[1]	Long-term[2]		Initial Construction	Long-term
Albany, WY	9,790,000	3,916,000	63.750	624,090	249,640
Carbon, WY	18,531,000	7,412,000	60.313	1,117,660	447,060
Laramie, WY	3,597,000	1,439,000	66.000	237,400	94,960
Sweetwater, WY	15,108,000	6,043,000	61.823	934,010	373,600
Larimer, CO	47,000	19,000	73.438	3,430	1,370
Moffat, CO	35,169,000	14,068,000	60.720	2,135,480	854,190
Rio Blanco, CO	15,480,000	6,192,000	37.764	584,590	233,830
Weld, CO	5,224,000	2,090,000	67.291	351,520	140,610
Total	**102,946,000**	**41,179,000**	**NA**	**5,988,180**	**2,395,260**

[1] Initial valuations based on 11.5 percent assessment rate in Wyoming and 29 percent in Colorado.
[2] Assumes assessed valuation at 40 percent of construction cost after the pipeline has been operational for several years and is centrally assessed based on its contribution to annual corporate income.
[3] Average mill levies for real property in unincorporated areas of each county.

Source: ENSR, based on data from Entrega Gas Pipeline, Inc.; local county assessors; the Colorado Division of Property Taxation 2004; Wyoming Department of Revenue 2004.

Retail sales, property, income (in Colorado) and other taxes from the permanent employees living in would have comparatively no effect on state, county, or local tax revenues.

3.9.6 Transportation

The major transportation routes that would be crossed by the proposed pipeline project include U.S. I-25 and I-80, U.S. Routes 40 and 85, Colorado State Routes 13 and 14, and Wyoming State Routes 430 and 789. Rio Blanco County, Colorado, has two Colorado State Routes traversing through it, as most of the county is unpopulated, contains largely public lands, has rugged terrain, and is not located between two major cities. In contrast, the counties of Carbon, Albany, and Laramie, Wyoming, have various routes of transportation including U.S. Interstates, U.S. Routes, and Wyoming State Routes.

Another significant transportation feature in the region is the Union Pacific mainline route across southern Wyoming. The railroad corridor and I-80 generally parallel each other across much of the project area, the two major points of divergence occur in Carbon and Albany Counties where the railroad alignment goes around mountainous areas while the interstate highway is routed over and through the mountains.

Construction across roads, highways, and railroads would result in short-term impacts on public transportation while construction activities pass through the project area. Entrega has developed a draft Traffic and Transportation Management Plan to assist in mitigating potential impacts of project-related road use and construction activity (Entrega 2004h).

Entrega has stated that major paved roads, highways, and railroads would generally be crossed by boring beneath the road or railroad. These crossings would require the approval and appropriate permits from railroad companies, as well as state and local agencies. Boring typically requires additional temporary

workspace areas on both sides of the crossing for excavating bore pits to the depth of the pipeline while the roadway or railroad is allowed to remain open. There would be little or no disruption of traffic at road or railroad crossings that are bored.

Smaller or unpaved roads would typically be open cut where permitted by local authorities or landowners. The open-cut crossing method could require temporary closure of a road and establishment of detours. If no reasonable detour is feasible, at least one lane of a road would be kept open to traffic, except for brief periods when it is essential to close the road to install the pipeline. Entrega would avoid closing roads during peak traffic hours. Open-cut crossings would typically be completed and the road resurfaced in 2 to 10 days.

To maintain safe conditions, Entrega would direct its construction contractors to ensure enforcement of local weight restrictions and limitations by its vehicles and to remove any soil that is left on the road surface by the crossing of construction equipment. When it is necessary for equipment to cross roads, mats or other appropriate measures (e.g., sweeping) would be used to reduce deposition of mud.

Movement of construction equipment, materials, and crew members would result in an additional short-term impact on the transportation network. Much of the proposed project area is readily accessible by U.S. Interstates, state highways, secondary state highways, and county roads. Impacts on local traffic levels would be temporary given the linear and dispersed nature of the project as construction would move sequentially along the proposed pipeline route. Construction workers would commute to and from the project area from temporary housing in local towns and cities, although this would typically begin before sunrise and end after sunset, times of the day when daily local traffic tends to be light. Consequently, short duration congestion is likely to occur in some locations, affecting residents and other travelrs as well.

Minimal traffic is anticipated to be associated with operation and maintenance of the new pipeline as only six to eight permanent workers would be required to operate the pipeline. Therefore, no impacts on transportation networks would be expected to occur during operation of the proposed pipeline.

3.9.7 Property Values

Approximately 44 percent of the land affected by construction and operation of the proposed project would be on public lands; lands are managed by the BLM (32 percent), the State of Colorado (5 percent), the State of Wyoming (4 percent), the cities of Laramie and Cheyenne, Wyoming (3 percent), and the City of Fort Collins, Colorado (1 percent). The remainder of the land that would be affected (56 percent) is privately owned. A detailed description of land ownership is presented in chapter 3.0.

On both public and private lands, Entrega would acquire an easement for both the temporary (for construction) and permanent ROWs. The easement would provide Entrega the right to construct, operate, and maintain the pipeline, and establish a permanent ROW. In return, Entrega would compensate the landowner for use of the land and the temporary loss of crops or forage. Where the proposed pipeline route would cross BLM land, Entrega would acquire a ROW grant for construction and operation of the proposed facilities. The ROW grant essentially allows Entrega to lease the land from the BLM.

The potential effect that a pipeline easement may have on private property values or property income is an issue that would be negotiated between the parties during the easement acquisition process. The easement acquisition process is designed to compensate a landowner for the right to use the property for pipeline construction and operation. The impact a pipeline may have on the value of a tract of land depends on many factors, including the size of the tract, the values of adjacent properties, the presence of other utilities, the current value of the land, and the current land use. Construction of the proposed pipeline would not change the general use of the land, but would preclude construction of aboveground structures on the permanent ROW and might interfere with other current uses, e.g., irrigation and raising crops, on a short-term or long-term basis, or the loss of non-renewable resources or destruction of other improvements such as fences.

Prior to initiating any construction activities on non-federal lands, an easement would be pursued by the pipeline company to convey ROW from the landowner to the pipeline company. The easement negotiations between the company and the landowner also would include compensation for loss of use during construction, loss of nonrenewable or other resources, damage done to property during construction, and allowable uses of the ROW after construction. Because the easement acquisition process is conducted with the landowner, it is possible that tenants or lessees could be adversely impacted, though it is not known whether any instances of such impacts would occur in conjunction with the Entrega pipeline.

If an easement cannot be negotiated with the landowner and the project has been certificated by the Commission, the company may use the right of eminent domain granted to it under Section 7(h) of the NGA to obtain the ROW and extra work areas identified in the Certificate. Section 7(h) implies that eminent domain is a remedy of last resort, to be used "when any holder of a certificate of public convenience and necessity cannot acquire by contract, or is unable to agree with the owner of property to the compensation to be paid for, the necessary right-of-way..." There are a number of options available, short of eminent domain, to secure the property:

- negotiate to buy the land;
- negotiate to lease the land; or
- negotiate a "restrictive easement" arrangement with the landowner.

The company would still be required to compensate the landowner for the ROW and for any damages incurred during construction. However, the level of compensation would be determined by a court according to state law. Special permits would be obtained as needed for pipeline ROW through town, state, or federal lands.

Entrega is currently working to obtain the necessary easements for the proposed facilities. Through the negotiations with landowners, Entrega would be able to make minor route adjustments to accommodate landowner needs and requirements as long as those changes would not affect any environmentally sensitive areas, or affect other landowners without their approval. If easements are acquired through the use of eminent domain, it is more difficult to make adjustments to the route.

3.9.8 Environmental Justice

A description of the population types (i.e., races) residing within the eight counties crossed by the proposed pipeline route based on U.S. Census Bureau data from 2000 is presented in **table 3.9-9**. In Colorado, the proposed pipeline route would cross counties that generally contain a smaller proportion of minorities than are found statewide in Colorado with the exception of Weld County. Demographics for Wyoming counties that would be crossed by the proposed pipeline show a slightly larger proportion of minorities compared to Wyoming's statewide average.

Table 3.9-9
Race and Poverty

State/ County	Race as a Percentage of Total Population[1]								
	White	Black or African American	Asian	American Indian and Alaska Native	Native Hawaiian and Other Pacific Islander	Persons Reporting Other Race/Two or More Races	Total	Persons of Hispanic or Latino Origin, percent (2000)[1]	Persons Below Poverty, percent (1999)[2]
COLORADO	82.8	3.8	2.2	1.0	0.1	10.0	99.9	17.1	9.3
Rio Blanco	95.0	0.2	0.3	0.8	0.0	3.7	100.0	4.9	9.6
Moffat	93.6	0.2	0.3	0.9	0.0	5.0	100.0	9.5	8.3
Larimer	91.4	0.7	1.6	0.7	0.1	5.6	100.1	8.3	9.2
Weld	81.7	0.6	0.8	0.9	0.1	16.0	100.1	27.0	12.5
WYOMING	92.1	0.8	0.6	2.3	0.1	4.3	100.1	6.4	11.4
Sweetwater	91.6	0.7	0.6	1.0	0.0	6.0	99.9	9.4	7.8
Carbon	90.1	0.7	0.7	1.3	0.1	7.3	100.2	13.8	12.9
Albany	91.3	1.1	1.7	1.0	0.1	4.8	100.0	7.5	21.0
Laramie	88.9	2.6	1.0	0.8	0.1	6.6	100.0	10.9	9.1

[1] U.S. Department of Commerce, Bureau of the Census, Census 2000a: Summary File 1 (SF 1) 100-Percent data; DP-1- Profile of general demographic characteristics.
[2] U.S. Department of Commerce, Bureau of the Census, Census 2000b: Summary File 3 (SF 3) – Sample Data; DP-3 - Profile of selected economic characteristics.

Note: 1) This table is based on U.S. Census Bureau figures that, due to rounding, may total slightly more or less than 100 percent.
2) People who identify their origin as Hispanic or Latino may be of any race. Thus, the percent Hispanic or Latino should not be added to the race as percentage of population categories.

The percent of the population that earn incomes below the poverty level are summarized by county in **table 3.9-9**. In Colorado, Rio Blanco and Weld Counties have poverty rates higher than the statewide average. In Wyoming, Carbon and Albany Counties have a greater percentage of people living in poverty than the statewide average.

Entrega's proposed pipeline route effectively bypasses all concentrations or clusters of residential and commercial development, and for the most part is located on public lands or collocated with other utilities or near highway corridors. Furthermore no residential or commercial displacements are anticipated. Thus, the potential for adverse impacts on minorities or low-income populations, much less disproportionate impacts, is remote.

3.10 Air and Noise Quality

3.10.1 Air Quality

Climate

The regional climate of the proposed project area is predominantly classified as continental with some areas in Wyoming classified as temperate semi-arid. Surface wind direction and precipitation vary in the proposed project area due to significant geographical features. However, the specific characterization of the local weather based on data from Meeker, Colorado indicates an average maximum temperature in July of 86 degrees Fahrenheit (°F) and an average minimum temperature in January of 7°F with an average annual precipitation of 16.4 inches.

The average annual snowfall in Meeker from January 1900 through December 2003 was 69.8 inches. A representative station in Cheyenne, Wyoming, with wind observations from 1930 to 1996 indicates an annual average wind speed of 13 miles per hour and a predominant wind direction of west-northwest.

The climate of the west slope in western Colorado is primarily influenced by Pacific air masses which flow over the Sierra Nevada and Cascade Mountains. As the air masses pass over these mountains they lose much of the moisture that is typical of maritime air. This produces the arid environment of the intermountain region. In fact, the overwhelming characteristic of the intermountain portion of the west slope climate at lower elevations is arid. Typically, lower elevations in this area receive less than 10 inches (25.5 centimeters) of precipitation annually. The higher elevations in the mountains receive much greater amounts of precipitation, often 4 to 5 times as much as the valleys.

Existing Air Quality

Federal and state air regulations are designed to ensure that ambient air quality, including background, existing, and new sources are in compliance with the ambient standards. The EPA has designated areas of the U.S. as “attainment,” “non-attainment,” or “unclassified” with respect to ambient air quality standards.

The EPA has established National Ambient Air Quality Standards (NAAQS) for seven pollutants: sulfur dioxide (SO_2), carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM_{10} and $PM_{2.5}$), and lead. The NAAQS were set at levels the EPA believed were necessary to protect human health (primary standards) and human welfare (secondary standards). The Federal NAAQS for criteria pollutants are the same as the state standards established by the CDPHE and WDEQ, except the WDEQ regulates sulfur oxides (SO_x) instead of SO_2. All parts of Colorado and Wyoming through which the proposed project would be located are classified as attainment for all criteria pollutants.

Regulatory Requirements for Air Quality

The proposed pipeline project would generate air emissions through both short-term construction activities and long-term operation of the stationary emission units at the compressor stations. Emissions from all

phases of construction and operation of the emission units would be subject to applicable state and federal air regulations.

Air emission sources in Colorado and Wyoming are regulated at the federal level by the CAA, as amended, and at the state level by the Colorado Air Quality Control Commission (AQCC) Regulations and the Wyoming Air Quality Standards and Regulations (WAQS&R). The significant federal regulations established as a result of the CAA and incorporated in the AQCC Regulations and WAQS&R that are potentially applicable to the project include:

- New Source Performance Standards (NSPS);
- New Source Review/PSD review;
- Title V operating permits;
- National Emission Standards for Hazardous Air Pollutants (NESHAPs);
- Federal Class I area protection; and
- State regulations.

New Source Performance Standards

NSPS, codified in 40 CFR 60, establish pollutant emission limits and monitoring, reporting, and recordkeeping requirements for various emission sources based on source type and size. The NSPS apply to new, modified, or reconstructed sources. The federal NSPS have been incorporated into AQCC Regulation 6 and WAQS&R chapter 5.0. The potentially applicable NSPS are described below.

Subpart GG of the NSPS applies to new, modified, or reconstructed stationary gas turbines with a heat input at peak load of greater than or equal to 10 million British thermal units per hour (MMBtu/hr). The new turbines that would be installed as a part of the project are greater than 10 MMBtu/hr and are therefore subject to NSPS subpart GG. Subpart GG establishes oxides of nitrogen (NO_x) emission limits and fuel sulfur content limits. The gas turbines would meet the requirements of subpart GG by burning only pipeline quality natural gas.

NSPS subpart KKK applies to volatile organic compound (VOC) emissions from equipment leaks at onshore natural gas processing plants. Natural gas processing plants are defined under subpart KKK as any processing site engaged in the extraction of natural gas liquids from field gas, fractionation of mixed natural gas liquids, or both. The proposed Entrega compressor stations do not meet the definition of onshore natural gas processing plants; therefore, subpart KKK does not apply.

NSPS subpart LLL applies to sweetening units and sulfur recovery units at onshore natural gas processing plants. Sweetening units are defined by subpart LLL as process devices that separate the hydrogen sulfide (H_2S) and carbon dioxide (CO_2) contents from the sour natural gas. Sulfur recovery units are defined as process devices that recover elemental sulfur from the H_2S and CO_2 generated by a sweetening unit. No equipment would be installed at the proposed Entrega compressor stations to remove CO_2 or H_2S from the gas; therefore, subpart LLL does not apply.

Prevention of Significant Deterioration

Title I of the CAA establishes guidelines for the preconstruction/modification review of large air emission sources. Construction of sources in attainment areas must be reviewed in accordance with the PSD regulations. To be classified as a new major PSD source, the potential emissions from the source must either be greater than 100 tons per year (tpy) for any pollutant regulated by the EPA under the CAA for sources that are among the 28 source categories listed in section 169 of the CAA, or greater than 250 tpy for any pollutant regulated by the EPA under the CAA for sources that are not among the 28 source categories listed in section 169 of the CAA. Best Available Control Technology (BACT) analyses and detailed dispersion modeling are required if a new source is classified as a major PSD source.

Natural gas compressor stations are not identified in the list of 28 source categories in section 169 of the CAA; therefore, the applicability threshold for PSD review for the proposed compressor stations is 250 tpy.

Title V Operating Permits

Title V of the CAA requires states to establish an air operating permit program. The requirements of Title V are outlined in 40 CFR 70 and the permits required by these regulations are often referred to as Part 70 permits. Colorado and Wyoming have incorporated this program in Regulation 3 of the AQCC and chapter 6.0 of the WAQS&R.

If a facility's potential to emit exceeds the criteria pollutant or hazardous air pollutant (HAP) thresholds, the facility is considered a major source. The major source threshold level for an air emission source is 100 tpy for criteria pollutants.

The potential emissions for NO_x and CO at the proposed compressor stations would not exceed the Title V threshold of 100 tpy, with the exception of the Bighole Compressor Station. The Meeker Hub and Wamsutter Compressor Stations would be minor sources of air emissions and are therefore not required to obtain Title V operating permits. These stations would require state operating permits. The Bighole Compressor Station would be a major source of air emissions and would require a Part 70 permit. Entrega would apply for these permits from the CDPHE and WDEQ.

The major source HAP thresholds for a source are 10 tpy of any single HAP or 25 tpy of all HAPs in aggregate. Potential HAP emissions from each compressor station are less than 3 tpy. Therefore, the stations are not major sources of HAPs.

National Emission Standards for Hazardous Air Pollutants

The NESHAPs, codified in 40 CFR Parts 61 and 63, regulate HAP emissions. The proposed Entrega compressor stations are not one of the source categories regulated by Part 61. Therefore, the requirements of Part 61 are not applicable to the compressor stations. Part 63, also known as the Maximum Achievable Control Technology (MACT) standards, regulates HAP emissions from major sources of HAP emissions and specific source categories that emit HAPs. Part 63 defines a major source of HAPs as any source that has the potential to emit 10 tpy of any single HAP or 25 tpy of HAPs in aggregate. A MACT standard exists for

natural gas transmission and storage facilities (subpart HHH) and standards have been proposed for reciprocating engines (subpart YYYY), combustion turbines (subpart ZZZZ), and boilers (subpart DDDDD). All of these MACT standards apply to major sources of HAPs. The potential HAP emissions (in aggregate) from each of the proposed compressor stations are less than 3 tpy. Therefore, the compressor stations are not major sources of HAPs and would not be subject to NESHAP.

Federal Class I Area Protection

As determined previously, the proposed compressor stations are not anticipated to be subject to the PSD regulations. Therefore, the Federal Class I area protection provisions would not apply to this project.

State Regulations

Colorado air emissions are regulated by the AQCC per AQCC-1001. Regulation 1 of AQCC-1001 addresses emissions of particulates, smoke, CO, and SO_x. Specific requirements in this regulation can potentially apply to the operation and construction of the proposed Entrega compressor stations. The proposed compressor stations would require construction permits under Regulation 3 of the Colorado AQCC. Therefore, Entrega would be required to submit a fugitive particulate dust control plan as part of the construction permit application. Compliance with the emission limits set by the Colorado regulations for operational emissions would be demonstrated during the construction permitting process.

Wyoming air emissions are regulated by the WAQS&R. Chapter 2.0 of the WAQS&R establishes ambient air quality standards for H_2S, suspended sulfates, fluorides, and odor. There would be no quantifiable sulfates, fluoride, or odor emitted from the proposed compressor stations during normal operation. Emissions of H_2S would be extremely small and would only occur during unpredictable blowdown of pipeline sections for maintenance.

Chapter 3.0 of the WAQS&R mandates specific emissions requirements that can potentially apply to the operation and construction of the compressor stations. Such requirements address opacity emissions, PM_{10} and $PM_{2.5}$, NO_x, SO_x, CO, VOCs, and H_2S. The specific requirements and the limitations of these regulations would be addressed when obtaining all construction permits for the compressor stations.

Meeker Hub Compressor Station

Entrega would purchase up to 20 acres of land for the Meeker Hub Compressor Station site (MP 0.0). The Meeker location would require permanent use of private land.

The station would consist of a compressor building, utility building (including control room, utility room, and storage/shop room), and parking area. The compressors would be equipped with dry, low NO_x combusters in order to limit NO_x emissions. The station would be efficiently designed to move natural gas volumes through the pipeline while allowing for system flexibility. Primary facility components would include:

- filters and separators designed to accommodate the maximum total station gas volume;
- gas cooling equipment designed for use during normal operating conditions;
- an air compressor, appropriate for the turbine size, for use with required air hoisting equipment and tools;
- standby generator with automatic transfer switch, capable of operating at the maximum allowable station power load; and
- noise control equipment (i.e., mufflers) designed to meet the requirements for sound pressure levels at the nearest noise receptor.

The station would operate on locally purchased power and would be fully automated for remote controlled operation. Remote start/stop, setpoint controls, unit monitoring equipment, and station safety equipment would be installed at the location. The pipeline entering and exiting the compressor facilities would be below grade as practicable, but would be above ground prior to entering and exiting the buildings. The facility would not include any belowground vaults, basements, or crawl spaces. The station location would be fenced and contain external lighting.

Bighole Compressor Station

Entrega would require up to 20 acres of BLM land for the Bighole Compressor Station site (MP 76.3). The station would consist of a compressor building, utility building (including control room, utility room, and storage/shop room), and parking area. The compressors would be equipped with dry, low NO_x combusters in order to limit NO_x emissions. The station would be efficiently designed to move natural gas volumes through the pipeline while allowing for system flexibility. Primary facility components would include:

- a minimum of two unenclosed turbine-driven centrifugal compressor units outfitted with low-emission technology (although the compressor packages are designated as "unenclosed," they are wholly contained within a closed building);
- filters and separators designed to accommodate the maximum total station gas volume;
- gas cooling equipment designed for use during normal operating conditions;
- an air compressor, appropriate for the turbine size, for use with required air hoisting equipment and tools;
- a power generator with automatic transfer switch, capable of operating at the maximum allowable station power load (the Bighole Compressor Station would have two—one to provide power and one back-up); and

- noise control equipment (i.e., mufflers) designed to meet the requirements for sound pressure levels at the nearest noise receptor.

The station would operate from an on-site power generator and backup. The pipeline entering and exiting the compressor facilities would be below grade as practicable, but would be aboveground prior to entering and exiting the buildings. The facility would not include any belowground vaults, basements, or crawl spaces. The station location would be fenced and contain external lighting.

Wamsutter Compressor Station

Entrega would require up to 20 acres of BLM land for the Wamsutter Compressor Station site (MP 135.5). The station would consist of a compressor building, utility building (including control room, utility room, and storage/shop room), and parking area. The compressors would be equipped with dry, low NO_x combusters in order to limit NO_x emissions. The station would be efficiently designed to move natural gas volumes through the pipeline while allowing for system flexibility. Primary facility components would include:

- a minimum of two unenclosed turbine-driven centrifugal compressor units outfitted with low-emission technology (although the compressor packages are designated as "unenclosed," they are wholly contained within a closed building);

- filters and separators designed to accommodate the maximum total station gas volume;

- gas cooling equipment designed for use during normal operating conditions;

- an air compressor, appropriate for the turbine size, for use with required air hoisting equipment and tools;

- standby generator with automatic transfer switch, capable of operating at the maximum allowable station power load; and

- noise control equipment (i.e., mufflers) designed to meet the requirements for sound pressure levels at the nearest noise receptor.

The station would operate on locally purchased power and would be fully automated for remote controlled operation. Remote start/stop, setpoint controls, unit monitoring equipment, and station safety equipment would be installed at the location. The pipeline entering and exiting the compressor facilities would be below grade as practicable, but would be above ground prior to entering and exiting the buildings. The facility would not include any belowground vaults, basements, or crawl spaces. The station location would be fenced and contain external lighting.

The compressor station at Wamsutter (MP 135.5) would be located on BLM-administered lands.

Construction Impacts

Construction of the proposed pipeline and compressor stations would result in intermittent and short-term fugitive emissions. These emissions would include dust from soil disruption and combustion emissions from the construction equipment. Emissions from construction are not expected to cause or significantly contribute to a violation of an applicable ambient air quality standard because the construction equipment would be operated on an as-needed basis during daylight hours only. Additionally, Entrega would implement a Traffic and Transportation Management Plan to prevent fugitive dust from becoming a public nuisance or compromising safety via the use of this plan. Entrega also would implement dust control requirements during certain construction activities such as blasting, transporting soil or rock, trenching, and use of access roads. To control fugitive dust, Entrega has committed to implement the following mitigation measures:

- An activity or activities creating a visible plume of dust that extends for more than 300 feet (100 yards) from the source and has a visible opacity of 20 percent or greater would be considered noncompliant.

- Using water obtained from wells or surface water sources to suppress dust is permitted, but written approval from the landowner or regulatory agency is required prior to appropriation.

- Use of salts as a suppressant would be limited to magnesium chloride, if allowed by local, state, and federal agencies for application.

- Soils tracked on to paved roads would be removed. Soil tracked onto paved roads that extends more that 50 feet from the point of origin would be removed within 1 hour of discovery.

Air pollutants from construction equipment internal combustion engines would be limited to the immediate vicinity of the project area and would be short-term, resulting in an insignificant impact on air quality

Operational Impacts

Air quality would be affected by operation of compressor stations. Entrega proposes to construct three new compressor stations, two in Colorado (Meeker and Bighole) and one in Wyoming (Wamsutter).

During operation, the compressor stations would emit varying quantities of regulated air pollutants, including NO_x, CO, PM_{10} and $PM_{2.5}$, VOCs, and SO_2. Of these, the pollutants emitted in greatest quantities would be CO and NO_x, the primary component of which is NO_2. Emissions of hydrocarbons, a type of VOC, would be below major source quantity thresholds established by the EPA. Emissions of SO_2 would be proportional to the amount of sulfur in the fuel. Because the fuel would be natural gas containing very little sulfur, the amount of SO_2 emitted would be low. Additionally, HAPS would not be emitted in significant amounts, and would not result in Title V applicability. Because the compressor station potential emissions would be less than the PSD major source thresholds, dispersion modeling would not be required under the federal construction permitting program.

Table 3.10-1 provides the anticipated proposed emissions of NO_x, CO, VOC, PM_{10}, $PM_{2.5}$, SO_2, and HAPs from the new and modified compressor stations. Our site-specific analysis of operational impacts on air quality is presented below.

Emissions from a blowdown of the pipeline or compressor station could occur on a very rare basis, in emergency or maintenance operations. Such a blowdown would generate emissions of VOCs, consisting primarily of propane. Due to the infrequent occurrence, we conclude that there would be no significant air quality impacts from blowdowns.

If Entrega complies with Colorado and Wyoming regulations concerning the mitigation of fugitive dust emissions, we believe that the proposed project would incorporate sufficient measures to ensure adequate levels of air quality during construction at the compressor stations. Operational impacts would be mitigated by the state permitting process, which may include mitigative measures and the compressor stations are not expected to have a significant adverse impacts on local or regional air quality.

Table 3.10-1
Estimated Operational Compressor Station Emissions

Emission Units	NO_x (tpy)	CO (tpy)	SO_2 (tpy)	$PM_{10}/PM_{2.5}$ (tpy)	VOC (tpy)	HAPS (tpy)
Meeker Hub Compressor Station						
Turbine (2)	25.1	25.6	1.5	2.8	0.9	0.22
APU (2)	2.7	4.6	0*	0.02	0.04	0.04
Blowdown	-	-	-	-	0.34	-
Total	**27.8**	**30.2**	**1.5**	**2.82**	**1.28**	**0.26**
Bighole Compressor Station						
Turbine (2)	75.6	92.1	2.6	5.1	1.6	0.79
APU (2)	18.6	48.2	0.04	1.2	12.2	0.1
Blowdown	-	-	-	-	0.34	-
Generator	ND	ND	ND	ND	ND	1.8
Total	**94.2**	**140.3**	**2.64**	**6.3**	**14.14**	**2.69**
Wamsutter Compressor Station						
Turbine (2)	50.4	61.4	1.7	3.4	1.1	0.53
APU (2)	2.7	4.6	0*	0.02	0.04	0.04
Blowdown	-	-	-	-	0.34	-
Total	**53.1**	**66.0**	**1.7**	**3.42**	**1.48**	**0.57**

tpy = tons per year.
*less than 10^{-2} tons per year.
ND = No data available.

3.10.2 Noise

Construction, modification, and operation of the proposed project facilities would impact the local noise environment. The ambient sound level of a region is defined by the total noise generated within the specific

environment, and is usually comprised of sounds emanating from natural and artificial sources. At any location, both the magnitude and frequency of environmental noise may vary considerably over the course of a day and throughout the week. This variation is caused in part by changing weather conditions and the effect of seasonal vegetation cover.

Two measurements commonly used by federal agencies to relate the time-varying quality of environmental noise to its known effects on people are the equivalent sound level (L_{eq}) and the day-night sound level (L_{dn}). The L_{eq} is an A-weighted sound level containing the same sound energy as the instantaneous sound levels measured over a specific time period. Noise levels are perceived differently, depending on length of exposure and time of day. The L_{dn} takes into account the duration and time the noise is encountered. Late night and early morning (10:00 p.m. to 7:00 a.m.) noise exposures are penalized +10 decibels, to account for people's greater sensitivity to sound during the nighttime hours.

In 1974, the EPA published its Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (EPA 1974). This document provides information for state and local governments to use in developing their own ambient noise standards. The EPA has indicated that an L_{dn} of 55 dBA protects the public from indoor and outdoor activity interference. We have adopted this criterion and have used it to evaluate the potential noise impact from operation of the compressor facilities.

The state of Colorado regulates noise pollution at the state level under Colorado Statute Title 25, Article 12 (CS 25-12). An exemption exists under the state law for any facility that is permitted under a Federal action.

The State of Wyoming and the counties of Rio Blanco, Moffat, Sweetwater, and Carbon do not have any quantitative noise regulations.

Existing Noise Levels

The three proposed Entrega compressor stations would be located in rural areas with few noise sources in the immediate vicinity. All of the compressor stations would include new compression. Existing ambient noise measurements were taken at the nearest noise-sensitive area (NSA) and are summarized in **table 3.10-2**.

Construction Noise Impacts

The construction of the compressor stations would cause temporary increases in the ambient sound environment in the immediate vicinity of the construction sites. Construction of the pipeline would last for approximately 6 months and subsequent construction of the compressor stations would last for about 3 months. During construction, Entrega would be required to comply with any local construction noise requirements. In addition, Entrega has agreed to limit construction activities primarily to daylight hours. Nighttime noise levels would normally be unaffected by construction activities, as most construction is typically restricted to daylight hours. With construction restricted to daytime hours, and given the temporal and axial nature of construction, we do not believe that adjacent landowners would be adversely affected.

Table 3.10-2
Existing Noise Levels[1]

Location	Distance and Direction[2]	Daytime Equivalent Sound Level ($L_{eq}(d)$)	Nighttime Equivalent Sound Level ($L_{eq}(n)$)	24-Hour Equivalent Sound Level (L_{eq})	Day–Night Sound Level (L_{dn})[3]
Meeker Hub Compressor Station (MP 0.0)					
NSA #1	2,100 feet S	56.9	51.9	55.6	59.5
Bighole Compressor Station (MP 76.3)					
NSA #1	8,200 feet NW	45.6	39.9	44.2	47.8
Wamsutter Compressor Station (MP 135.5)					
NSA #1	8,390 feet NW	61.0	61.0	61.0	67.4

[1] All noise levels are in dBA.
[2] All distances are based on the NSAs location relative to closest boundary.
[3] L_{dn} noise levels are calculated assuming that the measured levels are representative of the day and night sound levels in the area.

Operational Noise Impacts

During operation of the pipeline the noise impact associated with the compressor stations would be limited to the vicinity of the facility. Primary operational noise sources at the proposed compressor stations would be the turbine intakes, turbine exhausts, oil coolers, gas aftercooler and turbine-compressor package. The noise from the auxiliary power units is not included in the noise assessment due to the temporary and rare operation of these units.

The compressor stations would be constructed in a manner that would minimize potential impacts from noise. Entrega states that the new compressors would be installed within acoustically designed buildings with acoustically rated doors, acoustical insulation, silenced ventilation systems, muffler systems on exhaust systems of new turbines, and may include covering of exposed metal pipe supports and aboveground piping.

Entrega also proposes to install blowdowns at each of the compressor stations to evacuate natural gas from the facility in the event of an emergency, accident or maintenance. Noise from a typical unsilenced blowdown event can be upwards of 100 dBA and Entrega has stated that each blowdown stack would be equipped with an appropriately designed silencer to reduce this noise. While we do not have good data on the resultant noise from a blowdown event, due to the rarity and short duration of each blowdown (approximately 2 to 4 times yearly for maintenance) we do not expect the resultant noise to be a significant annoyance or impact to local residents.

Entrega performed a noise assessment for the three proposed compressor stations. The acoustical analysis estimated noise reduction over distance via the SPM 9613 noise modeling program. **Table 3.10-3** shows the estimated noise resulting from the operation of the compressor stations at the nearest NSAs.

Table 3.10-3
Estimated Noise Levels from Compressor Stations

NSA	Distance/ Direction	Current Ambient Noise, L_{dn} (dBA)[1]	Noise Attributable to New Station, L_{dn} (dBA)	Post-Construction Noise, L_{dn} (dBA)	Noise Increase at NSA (dBA)
Meeker Hub Compressor Station (MP 0.0)					
NSA #1	2,100 ft south	59.5	60.8	63.3	3.8
NSA #2	4,000 ft north-northwest	55.5	51.5	57.2	1.7
Bighole Compressor Station (MP 76.3)					
NSA #1	8,200 ft northwest	47.8	45.7	51.2	3.4
Wamsutter Compressor Station (MP 135.5)					
NSA #1	9,390 ft northwest	67.4	42.7	67.4	0

[1] dBA: decibels of the A-weighted scale.

We received comments about noise from the Bighole Compressor Station affecting sage grouse. A discussion regarding this can be found in section 3.6.2.

Noise from the Bighole and Wamsutter Compressor Stations is estimated to comply with our 55 dBA L_{dn} noise limit and should not have an adverse noise increase at any NSA. The Meeker Hub Compressor Station is estimated to exceed our 55 dBA criterion at NSA #1 and Entrega has not yet finalized their equipment selection. To ensure that the Meeker Hub Compressor Station does not exceed 55 dBA at the nearest NSAs and to ensure that the Bighole and Wamsutter Compressor Station noise estimates are accurate **we recommend Entrega file with the Secretary far-field sound data (from either the manufacturer or a similar unit in service elsewhere) for the authorized compressors, manufacturer's specifications and attenuation data for the intake and exhaust silencers finally selected, a description and diagram of the final design of the compressor building, and a revised acoustical analysis reflecting the actual noise control equipment, for review and written approval of the Director of OEP, before commencing construction of the compressor facilities.**

In addition, to confirm that noise from the compressor station operations do not adversely affect local NSAs, **we recommend that Entrega file a noise survey with the Secretary no later than 60 days after placing the authorized unit(s) at the Meeker Hub, Bighole and Wamsutter Compressor Stations in service. If the noise attributable to the operation of the compressor stations at full load exceeds an L_{dn} of 55 dBA at any nearby noise-sensitive area, Entrega shall install additional noise controls to meet that level within 1 year of the in-service date. Entrega shall confirm compliance with the L_{dn} of 55 dBA requirement by filing a second noise survey with the Secretary no later than 60 days after Entrega installs the additional noise controls.**

If Entrega verifies that noise impacts have been mitigated, as indicated by the recommendations, we believe that project-operation noise levels at the nearest NSAs would not be significant.

3.11 Reliability and Safety

The transportation of natural gas by pipeline involves some risk to the public in the event of an accident and subsequent release of gas. The greatest hazard is a fire or explosion following a major pipeline rupture.

Methane, the primary component of natural gas, is colorless, odorless, and tasteless. It is not toxic, but is classified as a simple asphyxiate, possessing a slight inhalation hazard. If breathed in high concentration, oxygen deficiency can result in serious injury or death.

Methane has an ignition temperature of 1,000˚F and is flammable at concentrations between 5.0 percent and 15.0 percent in air. Unconfined mixtures of methane in air are not explosive. However, a flammable concentration within an enclosed space in the presence of an ignition source can explode. It is buoyant at atmospheric temperatures and disperses rapidly in air.

3.11.1 Safety Standards

The DOT is mandated to provide pipeline safety under Title 49, U.S.C. Chapter 601. The Research and Special Programs Administration's (RSPA), Office of Pipeline Safety (OPS), administers the national regulatory program to ensure the safe transportation of natural gas and other hazardous materials by pipeline. It develops safety regulations and other approaches to risk management that ensure safety in the design, construction, testing, operation, maintenance, and emergency response of pipeline facilities. Many of the regulations are written as performance standards which set the level of safety to be attained and allow the pipeline operator to use various technologies to achieve safety. RSPA ensures that people and the environment are protected from the risk of pipeline incidents. This work is shared with state agency partners and others at the federal, state, and local level. Section 5(a) of the NGA provides for a state agency to assume all aspects of the safety program for intrastate facilities by adopting and enforcing the federal standards, while section 5(b) permits a state agency that does not qualify under section 5(a) to perform certain inspection and monitoring functions. A state also may act as DOT's agent to inspect interstate facilities within its boundaries; however, the DOT is responsible for enforcement action. The majority of the states have either 5(a) certifications or 5(b) agreements, while nine states act as interstate agents.

The DOT pipeline standards are published in Parts 190-199 of Title 49 of the CFR. Part 192 of 49 CFR specifically addresses natural gas pipeline safety issues.

Under a Memorandum of Understanding on Natural Gas Transportation Facilities (Memorandum) dated January 15, 1993, between the DOT and the FERC, the DOT has the exclusive authority to promulgate federal safety standards used in the transportation of natural gas. Section 157.14(a)(9)(vi) of the FERC's regulations require that an applicant certify that it would design, install, inspect, test, construct, operate, replace, and maintain the facility for which a certificate is requested in accordance with federal safety standards and plans for maintenance and inspection, or shall certify that it has been granted a waiver of the requirements of the safety standards by the DOT in accordance with section 3(e) of the NGA. The FERC accepts this certification and does not impose additional safety standards other than the DOT standards. If the Commission becomes aware of an existing or potential safety problem, there is a provision in the Memorandum to promptly alert DOT. The Memorandum also provides for referring complaints and inquiries

made by state and local governments and the general public involving safety matters related to pipeline under the Commission's jurisdiction.

The FERC also participates as a member of the DOT's Technical Pipeline Safety Standards Committee which determines if proposed safety regulations are reasonable, feasible, and practicable.

The pipeline and aboveground facilities associated with the EPP must be designed, constructed, operated, and maintained in accordance with the DOT Minimum Federal Safety Standards in 49 CFR Part 192. The regulations are intended to ensure adequate protection for the public and to prevent natural gas facility accidents and failures. Part 192 specifies material selection and qualification, minimum design requirements, and protection from internal, external, and atmospheric corrosion.

Part 192 also defines area classifications, based on population density in the vicinity of the pipeline, and specifies more rigorous safety requirements for populated areas. The class location unit is an area that extends 220 yards on either side of the centerline of any continuous 1 mile length of pipeline. The four area classifications are defined as follows:

Class 1 Location with 10 or fewer buildings intended for human occupancy.

Class 2 Location with more than 10 but less than 46 buildings intended for human occupancy.

Class 3 Location with 46 or more buildings intended for human occupancy or where the pipeline lies within 100 yards of any building, or small well-defined outside area occupied by 20 or more people on at least 5 days a week for 10 weeks in any 12-month period.

Class 4 Location where buildings with four or more stories aboveground are prevalent.

Class locations representing more populated areas require higher safety factors in pipeline design, testing, and operation. Pipelines constructed on land in Class 1 locations must be installed with a minimum depth of cover of 30 inches in normal soil and 18 inches in consolidated rock.

Class 2, 3, and 4 locations, as well as drainage ditches of public roads and railroad crossings, require a minimum cover of 36 inches in normal soil and 24 inches in consolidated rock. Class locations also specify the maximum distance to a sectionalizing block valve (e.g., 10.0 miles in Class 1, 7.5 miles in Class 2, 4.0 miles in Class 3, and 2.5 miles in Class 4). Pipe wall thickness and pipeline design pressures, hydrostatic test pressures, maximum allowable operating pressure, inspection and testing of welds, and frequency of pipeline patrols and leak surveys must also conform to higher standards in more populated areas.

With the exception of a small segment between MPs 305.5 to 306.6 which is a Class II location, Entrega's entire pipeline route would cross sparsely populated, open land that is designated as a Class 1 area.

If a subsequent increase in population density adjacent to the ROW indicates a change in class location for the pipeline, Entrega would reduce the MAOP or replace the segment with pipe of sufficient grade and wall thickness, if required to comply with the DOT code of regulations for the new class location.

In 2002, congress passed an act to strengthen the Nation's pipeline safety laws. The Pipeline Safety Improvement Act of 2002 (HR 3609) was passed by Congress on November 15, 2002, and signed into law by the President in December 2002. No later than December 17, 2004, gas transmission operators must develop and follow a written integrity management program that contains all the elements described in §192.911 and addresses the risks on each covered transmission pipeline segment. Specifically, the law establishes an integrity management program which applies to all high consequence areas (HCAs). The DOT (68 FR 69778, 69 FR 18228, and 69 FR 29903) defines HCAs as they relate to the different class zones, potential impact circles, or areas containing an identified site as defined in §192.903 of the DOT regulations.

OPS published a series of rules from August 6, 2002, to May 26, 2004 (69 FR 29903), that defines HCAs where a gas pipeline accident could do considerable harm to people and their property and requires an integrity management program to minimize the potential for an accident. This definition satisfies, in part, the Congressional mandate in 49 U.S.C. 60109 for OPS to prescribe standards that establish criteria for identifying each gas pipeline facility in a high density population area.

The HCAs may be defined in one of two ways. In the first method an HCA includes:

- current Class 3 and 4 locations;
- any area in Class 1 or 2 where the potential impact radius[1] is greater than 660 feet and there are 20 or more buildings intended for human occupancy within the potential impact circle[2]; or
- any area in Class 1 or 2 where the potential impact circle includes an identified site.[3]

In the second method an HCA includes any area within a potential impact circle which contains:

- 20 or more buildings intended for human occupancy; or
- an identified site.

Once a pipeline operator has determined the HCAs on its pipeline, it must apply the elements of its integrity management program to those segments of the pipeline within HCAs. The DOT regulations specify the requirements for the integrity management plan at § 192.911.

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1 The potential impact radius is calculated as the product of 0.69 and the square root of the MAOP of the pipeline in psi multiplied by the pipeline diameter in inches.

2 The potential impact circle is a circle of radius equal to the potential impact radius.

3 An identified site is an outside area or open structure that is occupied by 20 or more persons on at least 50 days in any 12-month period; a building that is occupied by 20 or more persons on at least 5 days a week for any 10 weeks in any 12-month period; or a facility that is occupied by persons who are confined, are of impaired mobility, or would be difficult to evacuate.

Two potential HCAs would occur along the EPP route. The first is located at MP 15.5, near a recreational area associated with the Rio Blanco Lake SWA. The second location is the Wyoming State Penitentiary at MP 179.0. Upon obtaining the necessary permits for its project, finalizing the route, and prior to construction, Entrega would determine if its proposed pipeline could affect these locations. If appropriate, these locations would be incorporated into an Integrity Management Plan developed specific to the EPP as required by the DOT to ensure pipeline safety.

The pipeline integrity management rule for HCAs requires inspection of the entire pipeline in HCAs every 7 years.

Part 192 prescribes the minimum standards for operating and maintaining pipeline facilities, including the requirement to establish a written plan governing these activities. Under section 192.615, each pipeline operator must also establish an emergency plan that includes procedures to minimize the hazards in a natural gas pipeline emergency. Key elements of the plan include procedures for:

- receiving, identifying, and classifying emergency events, gas leakage, fires, explosions, and natural disasters;
- establishing and maintaining communications with local fire, police, and public officials, and coordinating emergency response;
- emergency shutdown of systems and safe restoration of service;
- making personnel, equipment, tools, and materials available at the scene of an emergency; and
- protecting people first and then property, and making them safe from actual or potential hazards.

Part 192 requires that each operator must establish and maintain liaison with appropriate fire, police, and public officials to learn the resources and responsibilities of each organization that may respond to a natural gas pipeline emergency, and to coordinate mutual assistance. The operator must also establish a continuing education program to enable customers, the public, government officials, and those engaged in excavation activities to recognize a gas pipeline emergency and report it to appropriate public officials. Entrega would provide the appropriate training to local emergency service personnel before the pipeline is placed in service. No additional specialized local fire protection equipment would be required to handle pipeline emergencies.

Entrega intends to control and monitor the pipeline using a Supervisory Control and Data Acquisition (SCADA) system. The SCADA system's control center would be located at Entrega's main office in Denver, Colorado. The SCADA system would allow Entrega to monitor volumes, pressures, and temperatures as well as the operating status of its pipeline facilities using microwave, telephone, or communication satellites. The SCADA system also would provide Entrega with information on the volume of natural gas flowing into its pipeline system and the volume of gas delivered to its customers, and would allow Entrega to quickly identify and react to equipment malfunctions. The SCADA system also would provide Entrega with the

capability to remotely start or stop certain compressors, thereby changing flow volumes to meet changes in customer demand for natural gas.

3.11.2 Pipeline Accident Data

Since February 9, 1970, 49 CFR Part 191 has required all operators of transmission and gathering systems to notify the DOT of any reportable incident and to submit a report on form F7100.2 within 20 days. Reportable incidents are defined as any leaks that:

- caused a death or personal injury requiring hospitalization;
- required taking any segment of transmission line out of service;
- resulted in gas ignition;
- caused estimated damage to the property of the operator, or others, or both, of a total of $5,000 or more;
- required immediate repair on a transmission line;
- occurred while testing with gas or another medium; or
- in the judgment of the operator was significant, even though it did not meet the above criteria.

The DOT changed reporting requirements after June 1984 to reduce the amount of data collected. Since that date, operators must only report incidents that involve property damage of more than $50,000, injury, death, release of gas, or that are otherwise considered significant by the operator. **Table 3.11-1** presents a summary of incident data for the 1970 to 1984 period, as well as more recent incident data for 1986 through 2003, recognizing the difference in reporting requirements (DOT 2003). The 14.5-year period from 1970 through June 1984, which provides a larger universe of data and more basic report information than subsequent years, has been subject to detailed analysis, as discussed in the following sections (Jones et al. 1986).

During the 14.5-year period, 5,862 service incidents were reported over the more than 300,000 total miles of natural gas transmission and gathering systems nationwide. Service incidents, defined as failures that occur during pipeline operation, have remained fairly constant over this period with no clear upward or downward trend in annual totals. In addition, 2,013 test failures were reported. Correction of test failures removed defects from the pipeline before operation.

Additional insight into the nature of service incidents may be found by examining the primary factors that caused the failures. **Table 3.11-1** provides a percentage distribution of the causal factors as well as the annual frequency of each factor per 1,000 miles of pipeline in service.

Table 3.11-1
Natural Gas Service Incidents by Cause

Cause	Incidents per 1,000 miles of Pipeline (percentage) 1970-1984	1986-2003
Outside force	0.70 (53.8)	0.10 (38.4)
Corrosion	0.22 (16.9)	0.06 (23.1)
Construction or material defect	0.27 (20.8)	0.04 (15.4)
Other	0.11 (8.5)	0.06 (23.1)
Total	**1.30 (100.0)**	**0.26 (100.0)**

The dominant incident cause is outside forces, constituting 53.8 percent of all service incidents. Outside forces incidents result from the encroachment of mechanical equipment such as bulldozers and backhoes; earth movements due to soil settlement, washouts, or geologic hazards; weather effects such as winds, storms, and thermal strains; and willful damage. **Table 3.11-2** shows that human error in equipment usage was responsible for approximately 75 percent of outside forces incidents. Since April 1982, operators have been required to participate in "One Call" public utility programs in populated areas to minimize unauthorized excavation activities in the vicinity of pipelines. The "One Call" program is a service used by public utilities and some private sector companies (e.g., oil pipelines and cable television) to provide preconstruction information to contractors or other maintenance workers on the underground location of pipes, cables, and culverts. The 1986 through 2003 data show that the portion of incidents caused by outside forces has decreased to 38.6 percent.

Table 3.11-2
Outside Forces Incidents by Cause (1970-1984)

Cause	Percent
Equipment operated by outside party	67.1
Equipment operated by or for operator	7.3
Earth movement	13.3
Weather	10.8
Other	1.5

The pipelines included in the data set in **table 3.11-1** vary widely in terms of age, pipe diameter, and level of corrosion control. Each variable influences the incident frequency that may be expected for a specific segment of pipeline.

The frequency of service incidents is strongly dependent on the year of pipeline construction. While pipelines installed since 1950 exhibit a fairly constant level of service incident frequency, pipelines installed before that time have a significantly higher rate, partially due to corrosion. Older pipelines have a higher frequency of corrosion incidents, since corrosion is a time-dependent process. Further, new pipe generally uses more advanced coatings and cathodic protection to reduce corrosion potential.

Older pipelines have a higher frequency of outside forces incidents partly because their location may be less well known and less well marked than newer lines. In addition, the older pipelines contain a disproportionate number of smaller diameter pipelines, which have a greater rate of outside forces incidents. Small diameter pipelines are more easlly crushed or broken by mechanical equipment or earth movements.

Table 3.11-3 clearly demonstrates the effectiveness of corrosion control in reducing the incidence of failures caused by external corrosion. The use of both an external protective coating and a cathodic protection system, required on all pipelines installed after July 1971, significantly reduces the rate of failure compared to unprotected or partially protected pipe. The data shows that bare, cathodically protected pipe actually has a higher corrosion rate than unprotected pipe. This anomaly reflects the retrofitting of cathodic protection to actively corroding spots on pipes.

Table 3.11-3
External Corrosion by Level of Control (1970-1984)

Corrosion Control	Incidents per 1,000 miles per Year
None-bare pipe	0.42
Cathodic protection only	0.97
Coated only	0.40
Coated and cathodic protection	0.11

3.11.3 Impact on Public Safety

The service incident data summarized in **table 3.11-1** include pipeline failures of all magnitudes with widely varying consequences. Approximately two-thirds of the incidents were classified as leaks, and the remaining third classified as ruptures, implying a more serious failure.

Table 3.11-4 presents the average annual fatalities that occurred on natural gas transmission and gathering lines from 1970 to 2003. Fatalities between 1970 and June 1984 have been separated into employees and nonemployees, to better identify a fatality rate experienced by the general public. Of the total 5.0 nationwide average, fatalities among the public averaged 2.6 per year over this period. The simplified reporting requirements in effect after June 1984 do not differentiate between employees and nonemployees. However, the data show that the total annual average for the period 1984 through 2003 decreased to 3.8 fatalities per year. Subtracting two major offshore incidents in 1989, which do not reflect the risk to the onshore public, yields a total annual rate of 2.9 fatalities per year for this period.

The nationwide totals of accidental fatalities from various manmade and natural hazards are listed in **table 3.11-5** in order to provide a relative measure of the industry-wide safety of natural gas pipelines. Direct comparisons between accident categories should be made cautiously, however, because individual exposures to hazards are not uniform among all categories. Nevertheless, the average 2.6 public fatalities per year is relatively small considering the more than 300,000 miles of transmission and gathering lines in service nationwide. Furthermore, the fatality rate is approximately two orders of magnitude (100 times) lower than the fatalities from natural hazards such as lightning, tornados, floods, earthquakes, etc.

Table 3.11-4
Annual Average Fatalities - Natural Gas Transmission and Gathering Systems[1,2]

Year	Employees	Nonemployees	Total
1970-June 1984	2.4	2.6	5.0
1984-2003[3]	-	-	3.8
1984-2003[3]	-	-	2.9[4]

1 1970 through June 1984 - American Gas Association 1986.
2 DOT Hazardous Materials Information System.
3 Employee/nonemployee breakdown not available after June 1984.
4 Without 18 offshore fatalities occurring in 1989 -- 11 fatalities resulted from a fishing vessel striking an offshore pipeline and 7 fatalities resulted from explosion on an offshore production platform.

Table 3.11-5
Nationwide Accidental Deaths[1]

Type of Accident	Fatalities
All accidents	90,523
Motor vehicles	43,649
Falls	14,985
Drowning	3,488
Poisoning	9,510
Fires and burns	3,791
Suffocation by ingested object	3,206
Tornado, flood, earthquake, etc. (1984 to 1993 average)	181
All liquid and gas pipelines (1978 to 1987 average)[2]	27
Gas transmission and gathering lines	2.6
Nonemployees only (1970 to 1984 average)[3]	

1 All data, unless otherwise noted, reflects 1996 statistics from the U.S. Department of Commerce, Bureau of the Census, "Statistical Abstract of the United States 118th Edition."
2 DOT, "Annual Report on Pipeline Safety - Calendar Year 1987."
3 American Gas Association 1986.

The available data show that natural gas pipelines continue to be a safe, reliable means of energy transportation. Based on approximately 302,000 miles in service, the rate of public fatalities for the nationwide mix of transmission and gathering lines in service is 0.01 per year per 1,000 miles of pipeline. Using this rate, the EPP might result in a public fatality every 305 plus years. This would represent a slight increase in risk to the nearby public.

3.11.4 Terrorism

In the aftermath of the terrorist attacks that occurred on September 11, 2001, terrorism has become a very real issue for the facilities under the FERC's jurisdiction. The FERC, like other federal agencies, is faced with a dilemma in how much information can be offered to the public while still providing a significant level of

protection to energy facilities. The FERC has been involved with other federal agencies in developing a coordinated approach to protecting the energy facilities of the U.S., and continues to coordinate with these agencies to address this issue. A Security Task Force has been created and is addressing ways to improve pipeline security practices, strengthen communication within the industry and the interface with government, and extend public outreach efforts. Consequently, the FERC has removed energy facility design plans and location information from its internet website to ensure that sensitive information is not readily available (RM02-4-000 and PL02-1-000 issued February 20, 2003). Entrega has stated that they are committed to cooperating with the FERC, along with other federal, state, and local agencies, in order to protect its energy facilities.

3.12 Cumulative Impacts

NEPA requires federal agencies to consider the cumulative impacts of proposals under their review. Cumulative impacts are defined in the Council on Environmental Quality regulations 40 CFR 1508.7 as "...the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions regardless of what agency... or person undertakes such other actions." These actions include current and projected area development (e.g., oil and gas); management activities and authorizations on public lands (e.g., range conversion and forestry programs); land use trends; and applicable industrial/infrastructure components (e.g., utility corridors). Although the individual impacts of each separate project might not be significant, the additive effects of multiple projects could be.

Existing projects were determined from review of Entrega photo-alignment sheets, Wyoming oil and gas facility maps (DeBruin 2002), field reconnaissance, and Entrega's FERC application. The proposed and reasonably foreseeable projects were based on ROW and well field development applications submitted to the BLM and FERC application information (WIC Piceance Basin Expansion Project [PEBEP], EnCana Meeker Pipeline and Gas Plant Project [EnCana]). Construction timeframes for individual projects were compiled to estimate peak workforce numbers at various locations; however, the actual construction schedules for these projects will depend on factors such as economic conditions, the availability of financing, and the issuance of permits.

Projects and activities included in this analysis are generally those located within the same counties directly affected by construction of the EPP. Most effects of more distant projects are not assessed because their impact would generally be localized and not contribute significantly to cumulative impact In the proposed project area. However, the air quality study area consists of the regional air sheds.

Figure 3.12-1 provides a simplified representation of the existing and proposed gas processing facilities and interconnecting pipelines near the proposed Entrega Meeker Hub Compressor Station that were included in the EPP cumulative analysis. **Table 3.12-1** provides additional details about the facilities illustrated in **figure 3.12-1**. **Figure 3.12-2** is a schematic drawing illustrating the number of gas and liquids pipelines included in the existing utility corridor where the EPP would be located, as well as sensitive resources encountered along the entire route. The majority of the pipelines in this utility corridor were constructed in the last 30 years, and the revegetation of the ROW has varied with climate and soil type. From Rawlins eastward, grasslands have largely recovered to former cover; the shrub-scrublands consisting of saltbush and Wyoming sagebrush from Rawlins west to Wamsutter and south to the Piceance Basin have only partially recovered former shrub cover and height. We assumed that an average of 50 feet of ROW remains partially revegetated for each pipeline in the corridor.

Compressor stations are often located at major interconnection points within the interstate gas pipeline system. The following are major pipeline interconnection nodes along the Entrega Pipeline: Wamsutter, Sinclair, west of Laramie, and the Rockport Hub south of Cheyenne. There are existing compressor stations at each of these four major interconnection points. We assumed each compressor station site (which may include more than one pipeline operator) is a fenced area of 60 acres.

Pipeline Segment E

Pipeline Segment F

Pipeline Segment C

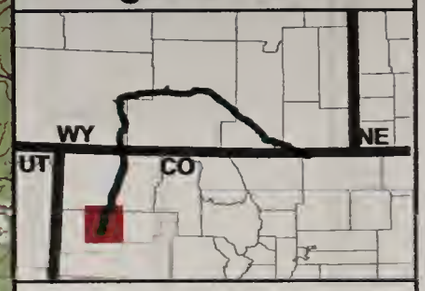
Pipeline Segment G

Pipeline Segment D

Pipeline Segment B

Pipeline Segment A

Regional View



125 0 125 Miles

LEGEND

- Existing Greasewood Hub
- Proposed Meeker Hub
- Proposed EnCana Meeker Gas Processing Plant
- Area of Critical Environmental Concern
- Gas Flow Directions

1 0 1 Miles

Entrega Pipeline Project

Figure 3.12-1

Proposed Meeker Hub, Greasewood Hub, and Proposed EnCana Meeker Gas Plant and Interconnecting Pipelines

2/9/05

Table 3.12-1
Natural Gas Facilities Included in the EPP Cumulative Analysis Located Near the Proposed Meeker Hub

Facilities	Existing	Proposed
	ABOVEGROUND FACILITIES	
Greasewood Hub	Compressor Stations (CIG, Kinder Morgan, Questar) Pipeline interconnections, meters, pig launchers and receivers	TransColorado North Expansion Project (Additional Compression for WIC Piceance Expansion Project)
Meeker Hub	EnCana Compressor Station Pipeline interconnections, meters	Entrega Compressor Station Pipeline interconnections, meters
EnCana Meeker Gas Plant		Natural gas liquids separation from natural gas; natural gas dehydration; carbon dioxide reduction; gas compression (electrical).
	PIPELINES	
Pipeline Segment A (Meeker Hub to Greasewood)	Questar 14-inch natural gas CIG 20-inch natural gas TransColorado 22-inch natural gas	
Pipeline Segment B (Meeker Hub to American Soda Corridor)	Kinder Morgan 4-inch natural gas Exxon Mobil 6-inch natural gas	Entrega 36-inch natural gas EnCana 36-inch natural gas; 30-inch natural gas; 10-inch natural gas liquids; 12-inch water or natural gas
Pipeline Segment C (American Soda Corridor to Proposed EnCana Meeker Gas Plant)	EnCana (Former American Soda) 8-inch natural gas; 10-inch natural gas liquids; 12-inch water or natural gas	EnCana 36-inch natural gas; 30-inch natural gas; 10-inch natural gas liquids; 12-inch water or natural gas
Pipeline Segment D (Greasewood Hub to Segment B)	EnCana (Former American Soda) 8-inch natural gas; 10-inch natural gas liquids; 12-inch water or natural gas	
Pipeline Segment E (American Soda Corridor to Segment F intersection)	Kinder Morgan 4-inch natural gas	Entrega 36-inch natural gas
Pipeline Segment F (Greasewood Hub to Segment C Intersection)	Exxon Mobil 6-inch natural gas CIG 20-inch natural gas Northwest 10-inch natural gas	
Pipeline Segment G (Greasewood Hub to Dry Fork Piceance Creek)	PSCo 12-inch natural gas	WIC 24-inch natural gas (Piceance Basin Expansion Project)

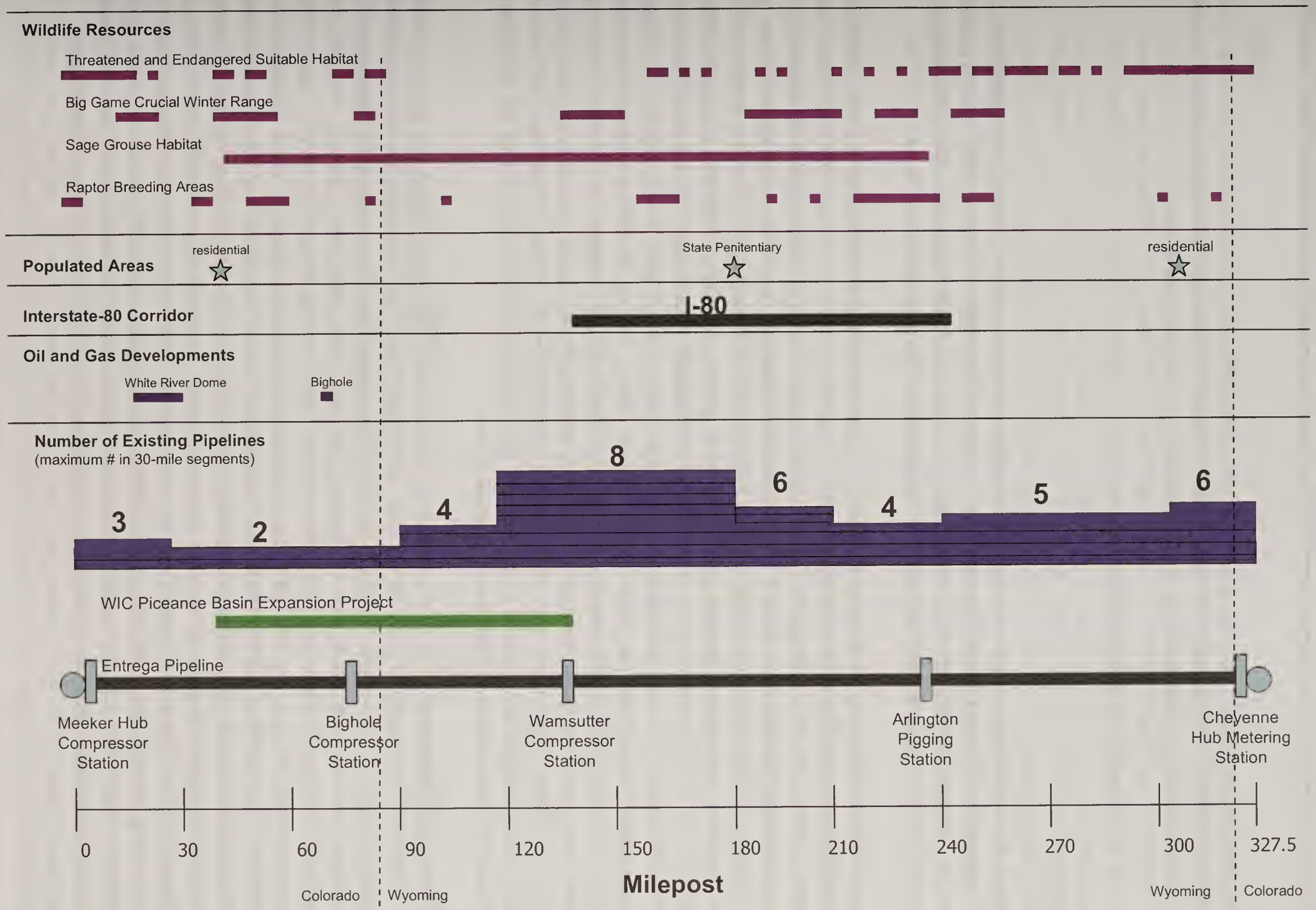


Figure 3.12-2. Location of the Entrega Pipeline in Relation to Existing and Proposed Parallel Pipelines and Sensitive Resources

Other linear facilities located within or adjacent to this large pipeline corridor include I-80, the Union Pacific Transcontinental Railroad, several fiber optic cables, and low voltage electrical transmission lines. Nearby communities served by I-80 include Wamsutter, Rawlins, Laramie, and Cheyenne.

3.12.1 Cumulative Impacts to Resources

Geology

Geologic Hazards. Regional seismic hazards, including earthquake ground shaking and subsidence and fault movement sufficient to cause damage, are very unlikely (see section 3.1.3). Several existing pipelines within the Entrega Pipeline corridor cross faults but none of these faults are active. Consequently, cumulative impacts related to fault movement and seismic activity are not anticipated.

Mineral Resources. Nearly all of the proposed EPP pipeline route, and those pipelines that parallel the proposed route, cross oil and gas producing reservoirs and/or oil shale-bearing formations. The EnCana Meeker Gas Plant site and associated pipelines overlie soda mineral and oil shale deposits. Exploitation of the soda mineral deposits has ceased, and the existing mine site would be converted to natural gas processing uses. Other mineral sources crossed by the pipelines include gravel, uranium in the Medicine Bow Mountains, and copper, gypsum, carbonates, and granite along the flanks of the Laramie Range (USDOI 2002a). Although the presence of facilities within the corridor that would be occupied by the existing and proposed pipelines would preclude extraction of gravel and other minerals, oil and gas production could be accomplished through well pad offsets and directional drilling. Routing the EPP adjacent to the existing facilities in the established corridor would cause a very small increase in the amount of near-surface coal deposits precluded from future development. In fact, a recent study of the coal basins underlying the Rawlins Field Office jurisdictional area (BLM 2002) indicates that coal mining in this area is at a distinct economic disadvantage as compared to the Powder River Basin, and that no new mines are expected to open to exploit these coal deposits in the foreseeable future.

Paleontological Resources. The EPP would cross approximately 160 miles of BLM Condition 1 geologic units. Condition 1 is represented by "areas that are known to contain vertebrate fossils or noteworthy occurrences of invertebrate or plant fossils." Assuming an average disturbance width of 500 feet caused by prior projects, we note that construction of pipelines, fiber optic lines, roads and highways (including I-80) has previously removed surficial paleontological resources within an area of approximately 15 square miles. Construction of the Entrega and WIC pipelines would contribute approximately 3.8 and 2.4 square miles, respectively, of surface and trench disturbance in Condition 1 units. Construction of the EnCana Meeker Gas Plant and associated pipelines would disturb less than 0.1 square mile of Condition 1 fossil formations. Pre-construction paleontological surveys have been, or will be completed for the three projects. Trench monitoring would be conducted in areas with high potential for important fossils. Fossil material would be recovered and recorded from sites that warrant these investigations. The EPP would contribute to the cumulative exposure and potential loss of scientifically valuable fossils, but construction monitoring would ensure that new scientific information would be collected and added to the existing body of knowledge.

Soils

Cumulative soil disturbance within the study area from existing utility projects is approximately 26.5 square miles; the proposed projects would disturb approximately 10.8 square miles. The existing pipeline projects have been installed for 10 years or more, and the construction ROWs have been partially or completely been restored to pre-existing conditions. Irrigated haylands and pasturelands have been returned to their prior uses. Thus, we do not expect these existing projects to contribute to the cumulative impact on soils. Potential cumulative erosion could occur where the EPP and El Paso construction disturbance areas overlap, or are located near each other between Entrega MPs 40 and 135. Best management practices for soil management and protection would be applied across all ownerships for both pipeline projects, as well as the EnCana Meeker Gas Plant. Revegetation mixtures would be applied that are appropriate to soil conditions and expected future uses (grazing, wildlife habitat). As a consequence, the potential for cumulative erosion increases caused by one or more of these projects is low.

The potential for cumulative impacts occurs in dissected drainages and on steep slopes where existing pipelines have already been located in the most favorable locations. Example areas where one or more new pipelines would be constructed are listed in **table 3.12-2**. The primary cumulative impact issue is that surface drainage controls (e.g., water bars) installed for the new pipelines could adversely affect the existing drainage controls on adjacent pipelines. The EPP would integrate its surface drainage system with that of any adjacent pipeline during final grading, thereby avoiding excessive stormwater runoff from cumulative pipeline sources in the same utility corridor.

Table 3.12-2
Steep Slope/Incised Channel Areas Crossed by Existing and Proposed Pipelines (Entrega and WIC)

Location	Existing Pipelines (Number)	Entrega	WIC Piceance Basin Expansion
Colorow Mountain (MPs 20 to 21)	3	X	
North Side Little Snake River (MPs 85 to 87)	2	X	X
Sand Creek and Willow Creek Drainages (MPs 95 to 99)	4	X	X

Sensitive Soils. The primary cumulative sensitive soils issue is the maintenance of agricultural soil productivity where these soils have been disturbed by multiple pipelines. Based on STATSGO soils data, Entrega estimates that the proposed pipeline would cross about 7 miles of hydric soils in Colorado and 58 miles in Wyoming. These areas generally equate to irrigated pasturelands where shallow water tables have been augmented by seasonal irrigation. The majority of these areas are located in Albany and Laramie counties, Wyoming. Construction of Encana gathering and delivery pipelines across irrigated lands in the Piceance Creek floodplain (Pipeline Segment C, figure 3.12-1) would disturb about 5 acres. The Entrega pipeline is not collocated with the EnCana project at this crossing. The primary cumulative impact issue is to ensure that surface drainage is restored across the Entrega construction ROW as well as adjacent pipeline ROWs, and to ensure that soil compaction is relieved in haylands and pasture. The EPP and PBEP pipeline

construction ROWs would be adjacent to each other across irrigated pastures at the Yampa River crossing and across dry pasture at the Little Snake River crossing. Both projects propose to directionally drill the Yampa crossing; however, both projects would cause surface disturbance in the same irrigated pasture at this crossing. Both EPP and PBEP projects have prepared, or would be required to prepare plans to restore and monitor irrigated soils. Application of these plans would ensure that agricultural productivity would be maintained over the long term. EnCana's plans to restore irrigated lands within the Piceance Creek floodplain are unknown.

Soil mixing and compaction effects on other sensitive soils (shallow, rocky, saline) during construction would be addressed on a site specific basis by the EPP, PBEP, and EnCana projects, and would not represent cumulative impacts (see Erosion above).

Water Resources

Groundwater. Existing pipeline and other utility projects do not consume groundwater. The EPP and PBEP projects do not propose to consume groundwater for construction or operation. Both projects would implement spill containment and control plans as required by the BLM and state agencies. No cumulative impacts on groundwater volume or quality from the EPP and PBEP projects are expected. Potable and process water requirements and sources for EnCana Meeker Gas Plant are not currently known. Produced water associated with natural gas would be separated at the processing plant; a portion of this produced water may be treated to make it suitable for other project purposes.

Surface Water. Both the EPP and PBEP projects propose to directionally drill the White and Yampa Rivers, and consequently there would be no cumulative sediment increases at these crossings. Based on currently available schedules, the two projects would not simultaneously construct across the Little Snake River, resulting in no cumulative suspended sediment increase. The two projects would not cause cumulative water withdrawal volume reductions on the White and Little Snake Rivers because the two project would withdraw hydrostatic test water at different times.

EnCana has provided a preliminary estimate of 19 acre feet of water for hydrostatic testing of its entire Meeker pipeline project. The sources of this water are not presently known. As stated previously, potable and process water requirements for the Meeker Processing Plant are not currently known. Disposal of produced water could include evaporation ponds or injection into an approved deep geologic formation.

Both the EPP and PBEP projects would follow the FERC procedures for crossing smaller perennial streams and intermittently flowing waterbodies, and site specific erosion control and bank stabilization measures would be used to prevent cumulative sedimentation increases where both projects cross the same stream channel at the same location.

The proposed Entrega alignment parallels numerous pipelines and other linear features that cross alluvial floodplains and fans that are subject to periodic flooding and scour. Although Entrega has taken steps to avoid or limit the effects of scour, should an event occur it could affect one or more other pipelines, in addition to the Entrega Pipeline. Potential cumulative damage interactions among pipelines as result of a major channel scouring event are not expected.

Vegetation

Invasive and Noxious Weeds. Invasive and noxious weed populations already exist, or potentially exist on the land adjacent to proposed construction ROWs for the EPP, PBEP, and EnCana projects, based on input from local NRCS offices and the BLM. The three projects would apply invasive and noxious weed controls prior to, and during construction, including pre-construction weed control and equipment cleaning. The three projects would be responsible for monitoring and controlling weed invasions on federal lands; comparable programs have been recommended on private lands, subject to landowner agreements. Based on proposed weed control measures, and equipment cleaning, the three projects would not cumulatively contribute to new weed infestations.

The total amount of vegetation that may be affected by all of the proposed projects is substantial but still relatively small compared to the abundance of similar habitat in the project area. While these projects could potentially fragment vegetation habitat, this effect would be minimal because no densely forested areas would be crossed by the proposed pipelines. This effect would be further reduced by the collocation of many of these projects with existing ROWs. All of the projects would involve mitigation measures designed to minimize the potential for long-term erosion, increase the stabilization of site conditions, and in many cases control the spread of noxious weeds, thereby minimizing the degree and duration of the cumulative impact of these projects.

Wetlands. The locations where cumulative impacts to wetlands would occur are where the EPP and PBEP would be collocated between EPP MPs 40 and 135 at Wamsutter. The majority of this disturbance would be in palustrine emergent wetlands, dominated by grasses and sedges. The EPP would disturb 2.3 acres, and El Paso 4.5 acres, for a cumulative total of 6.8 acres. The majority of this cumulative disturbance would be located at the Yampa River crossing. The EnCana pipelines would disturb about 5 acres of wetlands (irrigated pasturelands) along Pipeline Segment C (**figure 3.12-1**). The EPP and PBEP projects would apply FERC wetland crossing procedures, and would be subject to conditions contained in COE 404 permits and state water quality permits. None of the wetlands crossed would be permanently filled or drained. Therefore, cumulative effects to wetlands would be minor and short-term because of rapid recovery by grasses, sedges, and other herbaceous species.

Fish and Wildlife

Fisheries. The locations where cumulative impacts to fisheries could occur from stream channel disturbance, and hydrostatic water withdrawals are crossings of the White, Yampa, and the Little Snake Rivers, where the EPP and the PBEP would cross these waterbodies in the same year (late 2005). Both the EPP and PBEP would directionally drill the White and Yampa Rivers, which would avoid increased sedimentation and channel disturbance in these two rivers. Cumulative impacts from simultaneous construction by both projects across the Little Snake River are not expected because of differing construction schedules. Four EnCana pipelines would cross Piceance Creek at the same location (Pipeline Segment C, **figure 3.12-1**) resulting in increased sedimentation downstream of the open-cut crossings. The Entrega pipelines would not be collocated with the EnCana pipelines at this crossing location, and therefore would not incrementally add to the channel and aquatic habitat disturbance at this location.

Wildlife Habitat. The removal of woodland and shrubland would result in a long-term habitat reduction because the regeneration of woody species is slow in the project region. Construction and operation of the EPP would incrementally add to the width of habitat discontinuities within an existing utility corridor, which may affect the movement of species dependent on these habitats and would cumulatively reduce carrying capacity for woodland and shrubland dependent species.

Big Game. The EPP would cross Elk, Mule Deer, and Pronghorn critical or crucial winter habitats in both Colorado and Wyoming, respectively. Winter big game habitats that would be affected by the EPP, the proposed EnCana and PBEP Projects, and existing pipelines and other utilities are summarized in **table 3.12-3**. The incremental surface disturbance contributed by the EPP to the cumulative projects would represent a small fraction (less than 1 percent) of the individual big game ranges crossed. Both the EPP and PBEP projects have coordinated with the CDOW, BLM, and Wyoming Fish and Game to develop revegetation seeding mixtures that include shrub, forb, and grass species that are used by big game, as well as other target species. The application of these mixtures, followed by ROW monitoring after construction (see appendix C) would ensure that there is a long-term effort to restore big game forage in designated critical (Colorado) and crucial (Wyoming) winter habitats. Big game habitat rehabilitation measures are being determined for the EnCana project by the BLM in consultation with the CDOW.

Table 3.12-3
Overall Big Game Habitat Disturbance (Square Miles) for Existing and Reasonably Foreseeable Projects within the Entrega Pipeline Cumulative Study Area

State/Habitat Type	Existing Pipe and Compressor Station Plus I-80	Proposed EPP	Proposed EnCana Meeker Pipeline and Gas Plant	Proposed PBEP
Colorado				
Elk, Mule Deer, and Pronghorn Critical Winter Habitat	**1.2**	0.7	**0.2**	0.5
Wyoming				
Mule Deer Crucial/Yearlong Habitat	3.3	0.3		0.1
Pronghorn Crucial/Yearlong Habitat	4.8	0.5		0.1
Elk Crucial Winter Habitat	0.7	0.1		0.0
Total	**10.0**	**1.6**	**0.2**	**0.7**

Both the EPP and PBEP project would cross big game winter ranges in relatively remote areas of Colorado and southern Wyoming. These projects would be subject to winter construction closures depending on severity of the early winter, so that wintering big game conflicts would be largely avoided during this season. Big game winter range closures are being determined for the EnCana project by the BLM in consultation with the CDOW.

Special Status Species

With the exception of occasional foraging by bald eagles (but no winter roost sites), none of the species discussed below would be affected by the portion of the EnCana Meeker Gas Plant and Pipeline Project within the EPP cumulative study area.

Bald Eagle. Bald eagles use winter roosts and occasionally nest along the White, Yampa, and Little Snake Rivers in Colorado. Both the EPP and PBEP would be subject to construction timing restrictions during critical bald eagle use seasons, and would be requested to implement measures to avoid the loss of roost or nest trees. No other known projects are scheduled for work locations at these crossings that might coincide with either of these pipeline projects. Therefore, the EPP and the PBEP would not contribute to cumulative impacts to bald eagle winter or nesting habitat, nor would construction activities coincide with bald eagle critical use periods along these rivers.

Black-footed ferret and other prairie dog colony inhabitants (burrowing owl, mountain plover). Both the EPP and PBEP alignments would cross prairie dog colonies between the Yampa River and Wamsutter. The construction of both projects would cumulatively cause surface disturbance in prairie dog colonies and potential loss of prairie dog individuals, which are black-footed ferret prey. Both projects would be subject to pre-construction surveys. If ferrets were sighted, construction would not be authorized until the FERC had completed any required consultation with the FWS. If mountain plovers or burrowing owls were sighted during pre-construction surveys, construction constraint periods would be established to insure that fledglings leave the areas before construction begins. Based on these measures, no cumulative impacts to these species are expected, with the exception of the short-term surface disturbance within prairie dog colonies during construction.

Sage grouse. Initial Entrega aerial surveys conducted in 2004 indicated that seven sage grouse lek (breeding) sites were active within 2 miles of the EPP pipeline route in Colorado and Wyoming. Entrega has committed to seasonal construction restrictions in the vicinity of these leks. The EPP and PBEP projects would be located parallel to each other where both routes cross important sage grouse habitat from the north side of the Yampa River to the vicinity of Wamsutter, a distance of about 85 miles. Both projects would be subject to seasonal construction restrictions to avoid critical sage grouse breeding and brooding periods. Both projects would contribute to incremental increases in the width of the existing pipeline corridor, which is currently about 150 feet wide in this area. The combined EPP and PBEP construction ROWs through this segment could be as much as 185 feet, which would more than double the pipeline corridor width in sagebrush habitats. While there has been natural sagebrush reestablishment on the existing UBL and Rocky Mountain Natural Gas Pipeline ROWs between the White River and Wamsutter, the sagebrush density and height in the existing corridor is not yet comparable to adjacent undisturbed areas. Between Wamsutter and Arlington (a distance of about 110 miles), the Entrega Pipeline would expand a large existing pipeline corridor through Wyoming sagebrush habitats. Reduction in sagebrush cover exposes grouse to higher predation rates and may limit bird movement across these discontinuities. Reduction in sage grouse populations and reductions in use of traditional lek sites have been documented in oil and gas well fields in Alberta, Wyoming, and Colorado (Connelly et al. 2000). Other factors, such as wildfires, periodic drought, invasion by cheatgrass, and intensive livestock grazing also adversely affect sage grouse habitat suitability (Connelly et al. 2004). In summary, the EPP and PBEP would contribute to the cumulative

long-term reduction in, and fragmentation of sage grouse habitat in Colorado and Wyoming by expanding an existing utility ROW. Both projects would adhere to seasonal restrictions during sage grouse breeding and brooding periods, and therefore cumulative indirect effects from increased human activity and noise during construction would not occur.

Colorado River Fish (Colorado Pikeminnow). Both the Entrega and WIC pipelines would be directionally drilled under the White and Yampa Rivers, which contain listed fish species. Both projects would be subject to hydrostatic test water volume and timing constraints for withdrawals from these rivers. Based on these construction requirements, no cumulative water quality or channel habitat impacts on populations to this listed fish are expected.

Dudley Bluffs twinpod and Dudley Bluffs bladderpod. These two plants occupy a very small area within the Piceance Basin near the Meeker Hub Compressor Station. Populations of both species are currently protected within the Dudley Bluffs ACEC, where no new surface occupancy by oil and gas facilities has been allowed by the BLM. Any future development activities on federal lands in the vicinity of the known populations would be subject to pre-construction surveys, avoidance requirements if plants are found, and FWS consultation. The EPP and PBEP would not contribute cumulative surface disturbance impacts to populations of these plants, based on the projects' location.

Land Use

Land Use Conversion and Construction Effects. The EPP, PBEP (via the TransColorado North Expansion), and EnCana projects would incrementally add to the acreage of aboveground oil and gas facilities in Colorado and Wyoming. Assuming that approximately 300 acres are already dedicated to compressor stations, mainline valves, meter stations, and pig launchers/receivers, Entrega proposes to add 60 acres in Colorado and 37 acres in Wyoming for aboveground facilities. WIC (via the TransColorado North Expansion Project) would require approximately 9 acres for new aboveground facilities (compressor station at Greasewood, mainline valves and interconnections), and EnCana would require approximately 50 acres for its Meeker Gas Plant.

While installation of new pipelines in an existing corridor would incrementally reduce the area available for future development, use of established utility corridors concentrates cumulative land use impacts. With the exception of a rural residential area between Cheyenne and Laramie (EPP only), the EPP, PBEP, and EnCana projects would not cumulatively affect residential land uses. The majority of rural residential lots between Cheyenne and Laramie are about 40 acres. The existing corridor contains of 5 to 6 utilities (pipelines and fiber optic cables) in this area. Assuming that one more pipeline were added (EPP), the 50-foot permanent ROW for 7 utilities across the full width of a 40-acre parcel would be 10.6 acres, or approximately 25 percent of the parcel area. However, the existing pipeline corridor pre-dates the subdivision of existing rangeland in this area, and owners and new buyers were informed of the pipeline easements in their deeds.

Special Management Areas. The EPP pipeline route would cross 5.6 miles of CDOWs Piceance Creek Wildlife Area in the irrigated meadows along Piceance Creek. The PBEP route would cross 3.3 miles of the same Wildlife Area in pinyon-juniper and sagebrush habitats between Greasewood and the White River.

The two projects would cause cumulative habitat reductions on these state-owned lands. We anticipate that the irrigated meadow lands can be restored in the short term, and restoration in upland sagebrush and pinyon juniper dominated areas would be long term. Both projects would parallel each other across 2.9 miles of CDOWs Bitter Brush SWA south of the Yampa River. Both projects would coordinate with the CDOW to maintain access for recreational users (primarily hunters) during the construction period. Both pipeline routes would cross the Overland Trail at MP 118. This crossing is in a remote location, and has not been developed for public access and education about the trail.

Visual Resources

The route segments where the Entrega and El Paso pipelines would be collocated are classified as BLM VRM Class III (partial retention of existing characteristics of the landscape) by the Little Snake and Rawlins Field Offices. The areas where the cumulative contrast of the two pipeline construction ROWs would be most apparent to public observers would be along Moffat County Road 57 at MP 34.5, where the Entrega pipeline would ascend a steep ridge and the WIC pipeline would parallel the existing drainage channel, and again along County Road 57 between MPs 40 and 45 where the two ROWs would be approximately 0.25 mile west of the road on low sagebrush and grass slopes. The two ROWs would be briefly visible to travelers along U.S. Highway 40 where the pipelines would make a perpendicular crossing of the Yampa River. The remainder of the collocated pipeline segment between the Yampa River and Wamsutter is very remote, and accessible only by improved and unimproved secondary roads. Both pipelines would cross I-80 in Wyoming in an area that has already been highly modified by existing pipeline ROWs and commercial and industrial developments in the vicinity of Wamsutter.

New surface disturbance associated with the construction of the EnCana gathering pipelines and the Entrega pipeline would be most evident to public viewers driving along Rio Blanco County Road 5 between the Meeker Hub Compressor Station and the intersection with an existing pipeline ROW (Segment B, **figure 3.12-1**). Construction of additional pipelines in the Segment C existing pipeline corridor also would be viewed by travelers along County Road 5. These areas are classified as BLM VRM Class III. This classification would likely be maintained with post-construction slope recontouring and revegetation. The proposed EnCana Meeker Gas Plant probably could not be seen from County Road 5 because of setbacks from the bluff above the Piceance Creek drainage. No plant facility height information is available.

Cultural Resources

A review of prior investigations of the 2-mile-wide EPP corridor in Colorado indicated a total of 304 resources of which 231 are prehistoric, 10 contain both prehistoric and historic components, and 63 are historic (Redman and Chandler 2004). Of this number, 86 sites are located within a 125-foot-wide EPP construction corridor. These data were compiled from prior pipeline surveys, most specifically the UBL that was constructed in 1993. Of the 86 sites, 27 of the recorded sites have been determined or recommended eligible for the NRHP. In the segment between the Wyoming state line and Wamsutter (Greiser 2004) a total of 98 recorded sites are located in the 2-mile-wide corridor. Of this number, 51 were located in a 125-foot-wide construction corridor. Of these sites within the potential construction ROW, 9 were considered potentially eligible to the NRHP. Comparable information is not currently available for the PBEP, but it is anticipated that the PBEP would intercept many of the same sites crossed by the EPP. Both projects have

completed or are completing pedestrian surveys that would be followed by treatment of sites that cannot be avoided. A currently unquantifiable number of both eligible and ineligible cultural resource sites between Entrega MPs 40 and 135 may experience cumulative surface disturbance from these projects. A more specific number of affected sites will be determined upon analysis of both project proposals for site avoidance. Both routes intercept the Overland Trail at MP 118. A plan to mitigate impacts any intact portions of the Trail would be required for both projects.

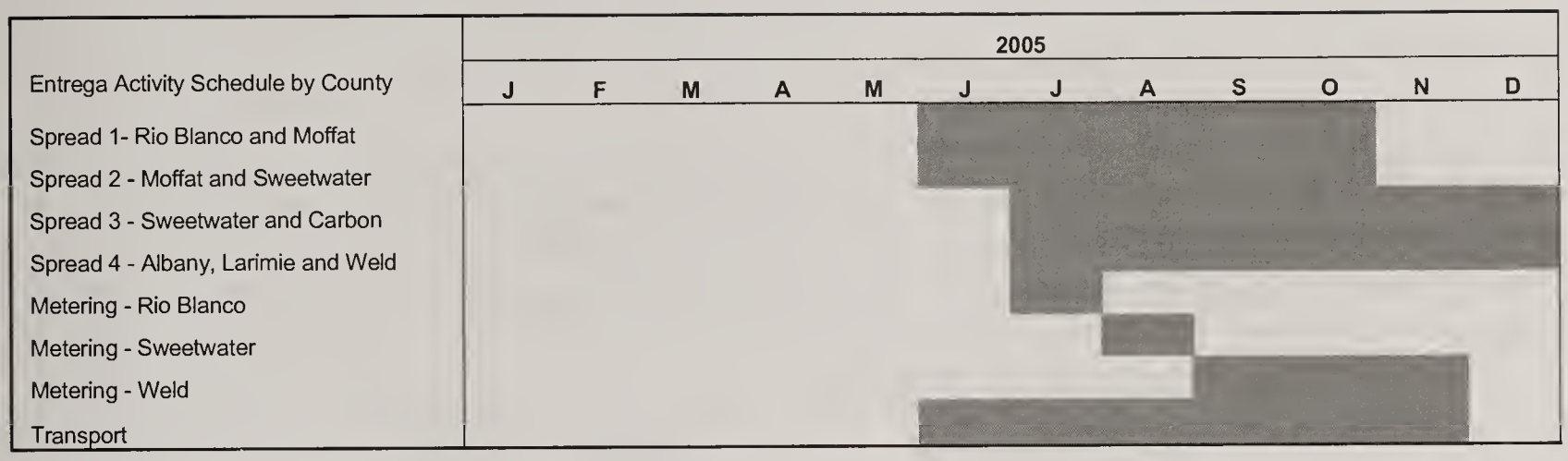
The EnCana gathering pipelines (Segment B, **figure 3.12-1**) would be collocated with the Entrega Pipeline over a distance of about 2 miles along Piceance Creek. Insufficient information is currently available to evaluate potential cumulative project effects on eligible sites.

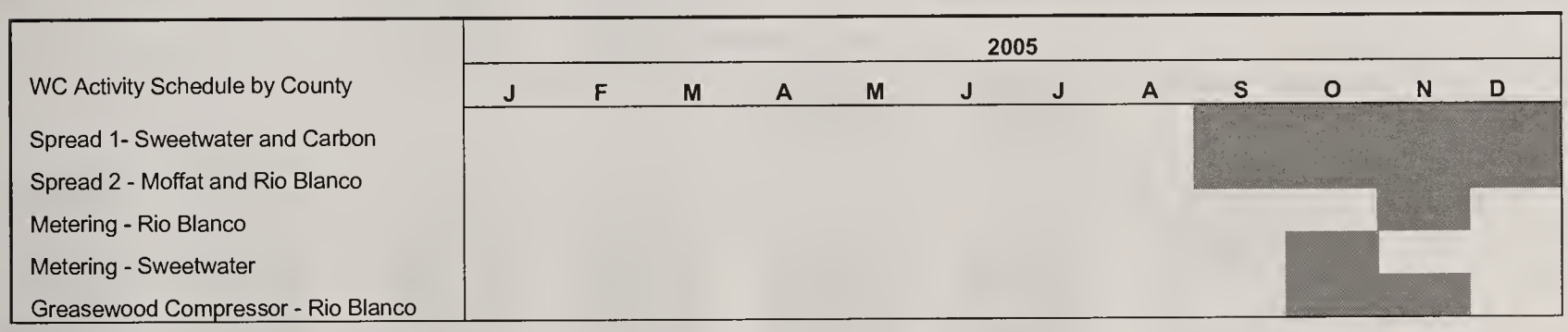
Socioeconomics

The socioeconomic discussion is focused on the potential interactions between the EPP and PBEP, since no other major construction project is expected to occur in the same timeframe and location as the EPP in the route segment between Wamsutter and the Cheyenne Hub. As discussed previously, the EnCana Meeker Processing Plant and pipeline project construction could overlap with the EPP and PBEP pipeline construction periods during the second half of 2005. Because specific EnCana construction time frames have not been established, this analysis acknowledges a risk of construction period overlaps, but does not attempt to quantify the effects on temporary housing availability or fiscal costs and benefits.

Employment. Cumulative workforce impacts between the EPP and the PBEP could occur in Carbon and Sweetwater Counties, Wyoming and Moffat and Rio Blanco Counties, Colorado. Entrega proposes to construct its Meeker Hub Compressor Station – Wamsutter segment from north to south. El Paso proposes to construct the Greasewood – Wamsutter segment from south to north. As a consequence, the potential for the peak cumulative workforce to coincide in time and space is in the vicinity of U.S. Highway 40 west of Craig. Smaller scale overlaps could occur in conjunction with the construction of additional compression other ancillary facilities, or in the event of changes in scheduling by one or the other of these projects. We examined the proposed schedules for both projects to estimate the time and location of greatest workforce overlap between the two projects. **Figure 3.12-3** illustrates the construction activities, and the expected distribution of the workforce along both pipeline routes. We assumed that the workforce would consist of 15 percent local hires.

Housing. **Figure 3.12-4** illustrates the potential housing demands within various nearby communities for the combined EPP and PBEP workforces in late 2005. The majority of the available temporary housing to serve these spreads is located in Craig, Colorado, and Rawlins, Wyoming. The infrastructure to accommodate short-term worker increases in both Baggs and Wamsutter is very limited. This region is currently experiencing oil and gas well field development, which increases the competition for temporary housing on an on-going basis. Over the years, a large inventory of temporary housing has developed in Sweetwater and Carbon Counties to meet demands from the oil and gas and mineral extraction industries. Thus, it is anticipated that the short-term influx of pipeline workers from both projects can be absorbed by the motels (3,375 rooms) and mobile home/RV spaces (6,832) in those counties. The availability of temporary housing





Entrega Workforce Distribution by County	2005 J	F	M	A	M	J	J	A	S	O	N	D
Spread 1- Rio Blanco and Moffat						450	450	450	450	450		
Spread 2 - Moffat and Sweetwater						405	405	405	405	405		
Spread 3 - Sweetwater and Carbon							450	450	450	450	450	450
Spread 4 - Albany, Larimie and Weld							400	400	400	400	400	400
Metering - Rio Blanco							68					
Metering - Sweetwater								68				
Metering - Weld									60	60	60	
Transport						90	90	90	90	90	90	90
Total						945	1863	1863	1855	1855	1000	940

WIC Workforce Distribution	2005 J	F	M	A	M	J	J	A	S	O	N	D
Spread 1 - Sweetwater and Carbon									250	250	250	250
Spread 2 - Moffat and Rio Blanco									250	250	250	250
Metering - Rio Blanco											65	
Metering - Sweetwater										65		
Greasewood Compressor - Rio Blanco										50	50	
Total									500	615	615	500
Combined						**945**	**1863**	**1863**	**2355**	**2470**	**1615**	**1440**

Figure 3.12-3. Entrega and WIC 2005 Construction Schedule and Workforce Estimates

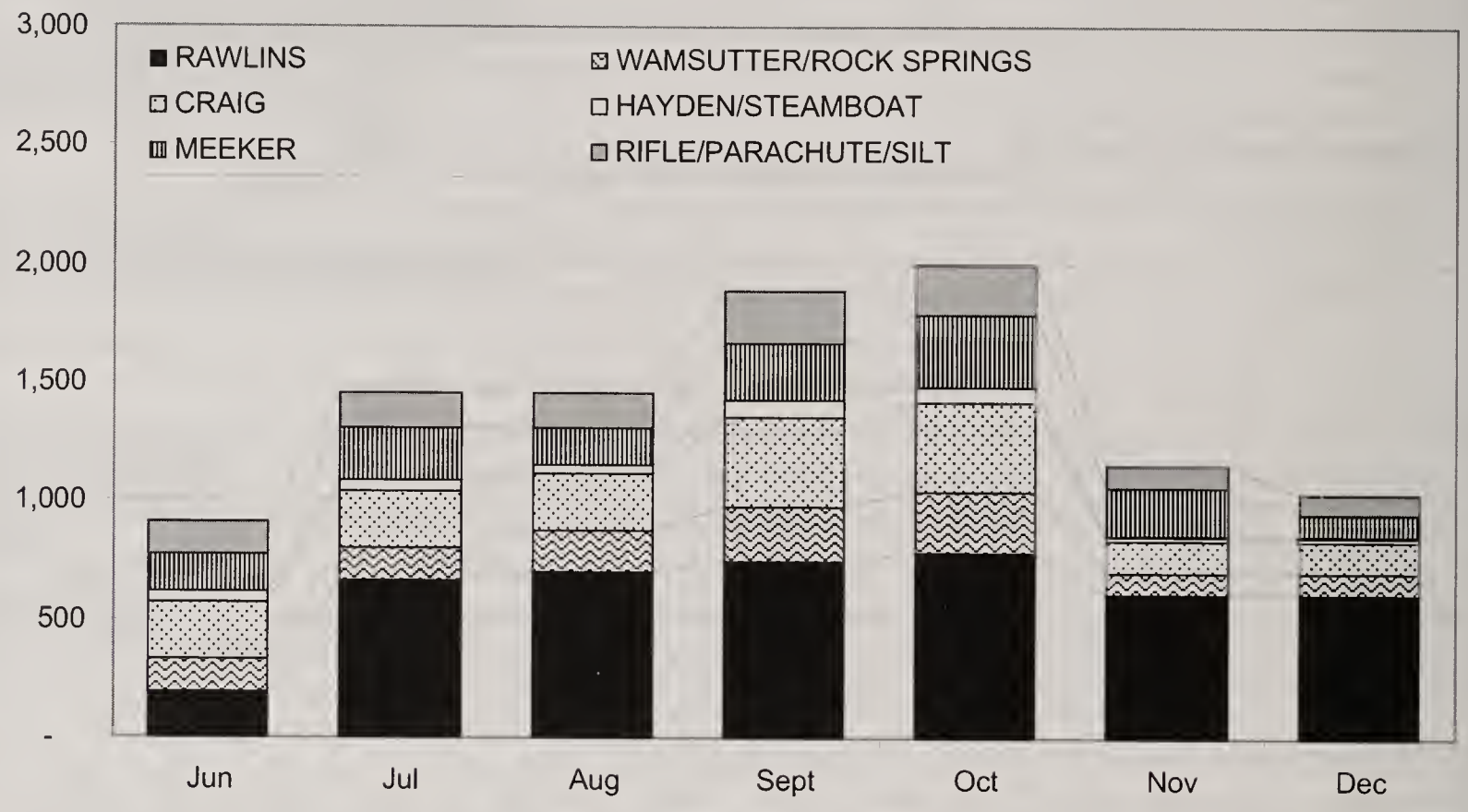


Figure 3.12-4. Combined Entrega and WIC Workforce Estimates, Projected Place of Residence

is more limited in Moffat and Rio Blanco Counties. Because both projects would still be active during the fall months, there could be short-term, potentially significant shortfalls in temporary housing and camp space availability in Meeker and Craig during the hunting season months of October and November.

Public Services and Facilities. Oil and gas industry workforces typically consist of a large fraction of non-residents who leave the region as drilling and construction projects are completed, if other job opportunities in the oil and gas industry are not available. As a consequence, there may be short-term demands for public services from this population, but major investments in public infrastructure (e.g., new schools, hospitals) would not be required. The oil and gas workforce is dispersed over a wide area at long distances from emergency services (e.g., hospitals, fire fighting). During public scoping, Rio Blanco County law enforcement and public safety officials expressed concern about the long distances for emergency response (the nearest major hospital is in Grand Junction), and insufficient local staff to respond to simultaneous emergencies, should that eventuality arise. This input suggests that investment is needed at the county level to expand service capabilities, at least temporarily, or the oil and gas industry needs to provide short-term additional support for these services in the form of staff, equipment, service fees, and planning and communications with service providers to address the cumulative impacts of multiple projects occurring in the same time frame.

Public Sector Fiscal Resources. Both the EPP and PBEP would cumulatively contribute revenues to Rio Blanco and Moffat Counties in Colorado, and Sweetwater and Carbon Counties in Wyoming during the construction period from local purchases by the companies and construction personnel, sales taxes on materials and equipment, and housing rentals. Long-term revenues would accrue to these counties from additional property taxes on improvements located within their respective boundaries, and shares of oil and gas severance taxes on local production. **Table 3.12-4** presents an estimate of the cumulative effects of the EPP and PBEP on ad valorem taxes in the counties where both projects would be constructed. The counties that would be most benefited are Rio Blanco and Moffat counties (about a 6 percent and 9 percent increase in the assessed valuation, respectively). The effects in Carbon and Sweetwater Counties, Wyoming would be relatively lower because of a relatively higher existing assessed property valuation on other improvements and natural resource production.

Table 3.12-4
Cumulative County Ad Valorem Tax Increases - Entrega and El Paso Projects

		Entrega Pipeline	
County	**2003 Assessed Valuation**	**Assessed Valuation**	**Percent Increase**
Carbon County	$382,269,728	$7,412,000	1.94%
Sweetwater County	$11,607,419,952	$6,043,000	0.05%
Moffat County	$298,876,180	$14,068,000	4.71%
Rio Blanco County	$304,607,460	$6,192,000	2.03%

		WIC Pipeline	
County	**2003 Assessed Valuation**	**Assessed Valuation**	**Percent Increase**
Carbon County	$382,269,728	NA	NA
Sweetwater County	$11,607,419,952	$4,642,186	0.04%
Moffat County	$298,876,180	$12,445,476	4.16%
Rio Blanco County	$304,607,460	$10,672,096	3.50%

		Combined	
County	**2003 Assessed Valuation**	**Assessed Valuation**	**Percent Increase**
Carbon County	$382,269,728	$7,412,000	1.94%
Sweetwater County	$11,607,419,952	$10,685,186	0.09%
Moffat County	$298,876,180	$26,513,476	8.87%
Rio Blanco County	$304,607,460	$16,864,096	5.54%

Transportation. Entrega and WIC propose to construct their projects in the same construction season (mid to late 2005) from Deception Creek in Moffat County to Wamsutter. If Entrega and WIC simultaneously construct in areas where the pipelines are closely parallel to each other, there would likely be substantial increases in construction traffic on Rio Blanco County Road 7 and Moffat County Road 57 between Meeker and Maybell; Colorado Highway 13 between I-70 and the state line south of Baggs; Wyoming Highway 789 between Baggs and Wamsutter; and U.S. Highway 40 between Craig and Maybell. Improved and unimproved BLM roads administered by the Little Snake and Rawlins Field Offices would provide access from Colorado Highway 13 and Wyoming Highway 789 to the pipeline ROWs between the Yampa River and Wamsutter. These secondary roads would experience short-term high increases in traffic while pipe is delivered and the pipelines are installed. These roads are currently experiencing daily traffic from well field

drilling and operational activities west of Baggs. The accurate construction schedules of both pipeline projects are not currently known.

The EPP and PBEP would follow transportation plans to manage construction vehicles, and would follow standard measures for fence repair, provision of temporary gates, and provision of temporary crossings for livestock. Equipment turning onto and off state highways and access roads may require flagmen and other controls to limit the risk of accidents on public roads. Both projects would be required to obtain local crossing permits for county roads, which would define weight limits and maintenance standards. The BLM has defined minimum standards for maintenance of existing BLM roads, and construction and operation of any new permanent roads on BLM-administered land.

EnCana has stated that it expects to employ 250 workers to construct the initial phase of the Meeker Processing Plant over a period of 6 months. A proposed construction start date is not known. If construction were to begin in the third or fourth quarter of 2005, there is potential for overlap between the Entrega pipeline and EnCana workforces and material deliveries on Rio Blanco County Road 5 that parallels Piceance Creek. This county road also could be used by EnCana's gathering pipeline construction workforces during the same period.

In summary, the EPP and PBEP overlapping pipeline construction periods could result in short-term (1 to 2 months) cumulative increases in traffic on secondary BLM and county roads between U.S. Highway 40 in Colorado and I-80 in Wyoming. Roads used by construction equipment would be maintained, and any damage repaired after construction is completed. Consequently, long term cumulative impacts to roads and traffic flow are not expected. Potential overlaps between the Entrega pipeline and EnCana processing plant and gathering pipeline construction workforces in the second half of 2005 are possible along Rio Blanco County Road 5, but cannot be confirmed based on available information.

Air Quality and Noise

Cumulative fugitive dust (particulate) increases may occur where the EPP and PBEP are using the same access road system to construct their projects (see Transportation above). Both projects would follow state and local requirements for dust control on roads and excavated surfaces.

On a local scale, cumulative increases in air pollutant emissions could occur where new compressor stations are sited at or near existing stations. Entrega would collocate its new compressor near existing compressor stations operated by other companies at the proposed Meeker Hub and Wamsutter. The remaining station (Bighole) is located individually in a rural area. A new natural gas-fired compressor (1,650 site-rated horsepower) would be installed within the existing Greasewood compressor station to provide compression for the WIC Piceance Basin Expansion pipeline. TransColorado's new Greasewood station would include three natural gas-fired compressors totaling 4,670 horsepower. EnCana would install several natural gas combustion heaters at its Meeker Processing Plant to remove carbon dioxide and water from the natural gas received from the gathering pipeline system. EnCana proposes to power its natural gas compressors with electricity provided from an existing transmission line. Each compressor station and gas processing plant is required to obtain a construction and operation permit from either Colorado and

Wyoming, and potential interactions with nearby emission sources must be considered in these permit applications.

On a regional scale, the gas-fired combustion turbines at the three EPP compressor stations would emit criteria pollutants, and small quantities of hazardous air pollutants. Recent regional air cumulative studies have been completed that address multiple pollutant emission sources within the same regional air sheds where the EPP compressor stations would be located (BLM 2004a,b). The EPP compressor stations are included as a type of foreseeable source in these analyses. The following paragraphs summarize the major conclusions of these regional studies.

Ambient Air Quality and Air Quality Related Values. The CALPUFF model was applied to estimate the far-field (50 km to over 200 km) ambient air quality and Air Quality Related Values (AQRV) impacts from the Desolation Flats project (BLM 2004a). The far-field analysis estimates the total impacts due to the existing background and foreseeable project sources. Impacts on air quality were estimated at nearby Class I and Class II areas. The sensitive areas include:

- Bridger Wilderness (Class I);
- Fitzpatrick Wilderness (Class I);
- Popo Agie Wilderness (Class II);
- Wind River Roadless Area (Class II);
- Dinosaur National Monument (Class II);
- Savage Run Wilderness (Class I);
- Mount Zirkel Wilderness (Class I); and
- Rawah Wilderness (Class I).

The protocol for the Desolation Flats assessment was to perform a single impact analysis for Alternative A. Under Alternative A, 592 gas wells would be developed at 555 locations, with a forecasted success rate of 65 percent resulting in 385 producing wells. The producing wells would be supported with six compressor stations and two gas processing plants. Compression and processing requirements for Alternative A are estimated at 32,000 horsepower. The analysis of Alternative A represents the worst-case scenario. Potential air quality impacts resulting from the proposed action and the no action alternatives would be less than the impacts resulting from the implementation of Alternative A.

The CALPUFF model was used to estimate ambient NO_2, SO_2, PM_{10}, and $PM_{2.5}$ concentrations for comparison with federal and state ambient air quality standards and PSD Class I increments and to address potential AQRV impacts. The estimated concentrations for all pollutants are far below the applicable federal and state ambient air quality standards and are less than one percent of the Class I PSD increments (BLM 2004a).

The Roan Plateau CALPUFF studies (BLM 2004 b) found similar results at Class I areas with respect to the Reasonably Foreseeable Development (RFD) in the region. The number of new wells in the maximum development scenario for the Roan Plateau was 3055. It was calculated that this level of development would require up to 67 new 1,000 hp compressors and 1 new glycol dehydrator per gas well.

National Ambient Air Quality Standards (NAAQS) were not exceeded for any pollutant or averaging period, and all concentrations include background. The PSD Increments were not exceeded for any pollutant or averaging period. Although these results are compared to the PSD increment consumption thresholds, they do not, nor are they intended to, represent a true PSD increment consumption analysis.

Visibility Impacts. There are two thresholds of visibility change that are used for determining the significance of potential impacts: the number of days in which the visibility is 1 deciview or greater; and the number of days in which the change is 0.5 deciview or greater. A deciview is a 10 percent reduction in visibility as compared to background concentrations of atmospheric haze components, as measured by a specialized instrument called a nepholometer. The FS uses the 0.5 deciview change as a threshold to protect visibility in sensitive areas. The 1.0 decivew change threshold is used in the Regional Haze Regulations as a small but just noticeable change in haziness and has been used by other agencies as a management threshold. The 0.5 and 1.0 deciview change thresholds are neither standards nor regulatory limits. Rather, they are used to alert the affected land managers that potential adverse visibility impacts may exist and the land manager may wish to look at the magnitude, duration, frequency, and source of the impacts in more detail in order to make a significance determination.

The Desolation Flats EIS analyzed far field impacts on visibility degradation at the sensitive receptor areas using the IWAQM/FLAG-recommended method (BLM 2004a) and found that visibility impacts do not exceed the thresholds of 0.5 or 1.0 deciview change levels. Therefore it is not expected that visibility impacts from the proposed pipeline compressors would cumulatively contribute to atmospheric conditions that would exceed these thresholds. The Roan Plateau study found that visibility at three Class I areas in Colorado may be reduced on a few days due to existing sources. However, construction and operation of the proposed pipeline would not materially contribute to cumulative visibility impacts because the RFD studied for the Roan Plateau EIS included future emissions estimates that encompass the proposed compression at the Meeker Hub and Wamsutter compressor stations required for this project.

Noise. The Wamsutter Compressor Station would be in an existing high-noise area in the vicinity of existing compressor stations and I-80. Entrega has demonstrated in its noise analysis that the proposed facilities would not increase the existing noise levels at the nearest occupied residence, even though the existing noise levels exceed the FERC standard of 55 dBA Ldn. The Entrega measurements account for existing noise sources (e.g., highway noise). El Paso does not currently propose to construct new compressor stations for its project, but the proposed TransColorado compressor station at Greasewood would serve this purpose. No residences are located within 4 miles of the Greasewood site.

System Safety and Reliability

As discussed previously, we conclude that no cumulative operational safety impacts are expected among pipelines and other facilities located in the same general utility corridor because of the spacing between pipelines, the depth of soil cover, and requirements to meet DOT Minimum Federal Safety Standards in Title 49 CFR Part 192.

ALTERNATIVES

CHAPTER 4

4.0 ALTERNATIVES

Several project alternatives have been identified and evaluated to determine if they would be reasonable and provide environmental or benefits when compared to the proposed action. The range of alternatives includes the No Action or Postponed Action Alternative, System Alternatives, Route Alternatives, and Route Variations.

The evaluation criteria used for developing and reviewing alternatives were:

- technical feasibility and practicality;
- significant environmental advantage over the proposed action; and
- ability to meet the project's stated objectives.

The development and analysis of alternatives were shaped by the public and agency interactions with Entrega that occurred during the FERC's NEPA Pre-Filing and scoping processes. Entrega established a preliminary pipeline centerline prior to initiating the pre-filing process. This was followed by stakeholder meetings and agency field reviews to obtain feedback on the proposed routing. Entrega developed new route segments to respond to specific issues, and then followed up with landowners and agencies to confirm proposed changes. The route alignment that Entrega filed on September 18, 2004, represents the EIS proposed action.

The alternatives that are carried forward in this analysis are those that:

- offer potential environmental impact reduction benefits relative to the proposed action;
- address routing comments from landowners that have not been resolved by Entrega; and
- represent deviations from an existing pipeline corridor where we believe the potential environmental costs/benefits favor locating the proposed pipeline segment outside the corridor. Several short route variations have already been incorporated into the Entrega proposed action. The reasons for these changes are contained in Entrega's Resource Report 10 that is posted on the FERC website, and are not further discussed here.

4.1 No Action or Postponed Action

The actions triggering this environmental review were Entrega's applications to the FERC for a Certificate and to the BLM for new or amended ROW grants across public (federal) lands. The FERC and the BLM have three courses of action in processing these applications. They may:

1. grant the approvals with or without conditions;
2. deny the approvals; or
3. postpone action pending further study by denying the application without prejudice.

4.0 ALTERNATIVES

If the FERC and the BLM deny or postpone EPP's applications, the environmental impacts identified in this EIS would not occur. In addition, should the no action alternative be selected, the stated objectives of EPP's proposal would not be met. Specifically, customers in the Midwest and Central U.S. would not have access to the 1.5 Bcfd of natural gas that the EPP proposes to transport. Additionally, producers in the Piceance and neighboring production basins (as well as the Central Rocky Mountains supply region) would be denied up to 1.5 Bcfd of new regional transportation capacity which could potentially hinder further gas development in this region. If this denial or postponement happens, new and existing natural gas users would need to obtain natural gas from other sources, use alternative energy sources, or use alternative fuels.

In this instance, the first option would likely require the construction of additional and/or new pipeline facilities in other locations to transport natural gas supplies currently being developed in the Piceance Basin or planned for development/production in the near future. If other natural gas facilities are approved and constructed, each project would result in its own set of specific impacts that could be less or greater than those associated with the current proposal. The second option, use of alternative energy sources, is infeasible because the use of solar, hydroelectric, or other energy sources (e.g., geothermal, fuel cells) has not been developed to the point where they would be viable energy alternatives to the proposed project.

Denying or postponing authorization of the proposed project also could result in more expensive and less reliable natural gas supplies for the end-users and/or greater reliance on alternative fossil fuels, such as coal or fuel oil. Increased use of alternative fossil fuels would likely result in greater emissions of SO_2, NO_x, and PM_{10} compared to other fossil fuels (**table 4.1-1**). If coal were used in lieu of (1.5 Bcfd x 365d) of natural gas, annual emissions of SO_2, NO_x, and PM_{10} would be 48,800, 18,900, 1,200 tons higher, respectively.

Table 4.1-1
Comparison of Controlled Emission of Criteria Pollutants for Three Boiler Types
(Tons Per Year)

Boiler Type	SO_x[1]	NO_x[2]	PM_{10}
Coal-fired	49,000	39,700	1,700
Oil-fired[3]	31,300	31,900	8,000
Natural Gas-fired	200	20,800	500

Assumptions:

[1] Assumes 1.2 percent sulfur coal, 1 percent sulfur oil, pipeline quality gas.

[2] Assumes LoNO_x burners on all units.

[3] Fuel oil-fired boiler assumes Number 5 oil, tangentially fired.

Source: Calculated from EPA Compilation of Air Pollutant Emission Factors AP42 Fifth Edition based on typical standard configurations and assumptions. Individual boiler performance may be significantly different from this example.

4.2 System Alternatives

System alternatives are those that use other pipeline systems to achieve the objectives of the proposed project. A system alternative would make it unnecessary to construct all or part of the EPP, although some modifications or additions to another existing pipeline system may be required to increase its capacity, or another entirely new system may need to be constructed. Such modifications or additions would result in some measure of environmental impact; however, the impact could be less than, similar to, or greater than that associated with construction of the proposed project.

4.2.1 Other Existing Pipeline Systems

The major interstate pipelines that pass through the proposed Meeker Hub, or are connected to the Greasewood Hub, are the Williams Northwest Pipeline Corporation (Northwest Pipeline) 26-inch-diameter line (including a lateral pipeline between the Piceance Basin and Rangely), the CIG UBL 20-inch-diameter line, Questar's 14-inch-diameter line, and the Kinder Morgan TransColorado 22-inch-diameter line. Entrega provided an estimate of the subscribed capacity of these pipelines in relation to actual volumes transported. **Table 4.2-1** summarizes this investigation.

Table 4.2-1
Capacity and Subscription Status of Existing Interstate Pipelines Serving the Piceance Basin

Pipeline	Capacity (MMcfd)	Recent Gas Flow (MMcfd)	Firm Subscriptions (MMcfd)
CIG Uinta Lateral	222	198	222
CIG to Northwest Pipeline	290	190	290[1]
Northwest Pipeline Lateral	40	26	4.7
Questar 14-inch (Dragon Trail)	120	40	120
TransColorado	385	338	385
Total	**1,057**	**792**	**1,021.7**

[1] Entrega's estimate based on best available information.

This information was compiled and extrapolated from interstate pipeline public websites, contacts with pipeline personnel, and recent industry presentations on the subject matter. The table includes a "CIG to Northwest Pipeline" category because CIG delivers significant quantities of gas to Northwest Pipeline at this point. However, since the Northwest Pipeline system transports gas from Utah's Uinta Basin, not all of the capacity shown or the flows are necessarily from the Piceance basin. This observation also generally applies to the CIG UBL, which transports gas from both the Uinta and Piceance Basins.

Assuming for the immediate future that these pipelines continue to carry the gas volumes recently transported (rather than their firm subscription volumes), the existing systems combined would be unable to accommodate more than about 35 percent of Entrega's proposed Phase I volumes and less than 18 percent of Entrega's total proposal of 1.5 Bcfd. Given the diameters of these existing pipelines (the largest being the Northwest Pipeline at 26 inches), transport of Entrega's volumes would require either:

a) substantial looping and additional compression on multiple systems or
b) looping one system in its entirety.

While option (a) might disperse the associated environmental impacts, it is unlikely to substantially reduce impacts when compared to the EPP. Further, the use of multiple pipeline systems would not meet Entrega's objective of gas deliveries to Wamsutter and the Cheyenne Hub.

The fact that both Entrega and WIC have signed agreements with new shippers sufficient to finance and construct entirely new, large-diameter pipelines (36 and 24 inches in diameter, respectively) indicates that the amount of capacity needed exceeds that which could be obtained economically by adding looping and/or compression to the existing pipeline systems. In other words, at least one existing system would have to be completely looped to accommodate the proposed Entrega volumes. This, in effect, is what Entrega proposes (i.e., to loop CIG's 20-inch-diameter UBL between the Piceance Basin and Wamsutter and the CIG/WIC systems between Wamsutter and the Cheyenne Hub). Given that the impacts associated with looping an entire pipeline system between the Piceance Basin and the Cheyenne Hub would be essentially equivalent to those associated with Entrega's proposal, the use of existing systems would not provide a significant environmental advantage over the proposed action and was eliminated from further consideration.

4.2.2 Proposed Pipeline Systems

WIC's PBEP represents a new pipeline alternative that could potentially convey Entrega's gas to Wamsutter by interconnecting with Entrega's supplier at the Greasewood Hub, increasing the diameter of its pipeline, and adding compression. The WIC project is not presently planned to extend between Wamsutter and the Cheyenne Hub. However, by modifying its current project, the PBEP represents an alternative pipeline system that could functionally meet Entrega's purpose and need.

Several commentors requested that we examine the alternative of transporting EPP's and PBEP's gas in a single larger pipeline between the Piceance Basin and Wamsutter. **Table 4.2-2** presents the facilities proposed by Entrega and WIC individually, as well as the facilities required by a "one-pipe" alternative sized to carry the combined gas volumes (i.e., 1.85 Bcfd) to Wamsutter.

As shown, the amount of pipeline required by such an alternative is substantially less than the sum of the two individual projects. However, the overall compression requirements of the alternative are substantially greater than the sum of the two projects. So the one-pipe alternative would balance less surface disturbance against far greater air and noise emissions for the operational life of the project.

While attractive in concept, this alternative would present a number of challenges. From an engineering standpoint, both companies plan on receiving natural gas from different producers and at different delivery pressures. Also, Entrega and WIC have commitments with the respective shippers to deliver volumes at different pressures at their respective interconnections. While not impossible, melding the various factors and requirements together into a common system would be extremely difficult. As evidence of this fact, we note that Entrega and WIC attempted to resolve their differences and negotiate a common pipeline for

several months before deciding to go forward as individual pipelines. As a result, we eliminated the one-pipe system alternative from further consideration. However, in recognition that a single pipeline would reduce the surface disturbance caused by construction of two pipelines, we developed and analyzed a "Collocation Alternative" that examines the options for collocating the two projects in the same ROW to the extent technically feasible. This alternative is presented in section 4.4.2.

Table 4.2-2
Comparison of Facilities Required by Entrega Proposed Action and "One-Pipe" Alternative

Facilities	Proposed Action	WIC Piceance Basin Expansion Project	"One-Pipe" Alternative
Pipeline (miles, diameter)	136 @ 36" (to Wamsutter) 191.5 @ 42" (Wamsutter to Cheyenne Hub)	141.7 @ 24" (to Wamsutter)	136 @ 36" (to Wamsutter)[1] 191.5 @ 42" (Wamsutter to Cheyenne Hub)
Total Pipeline	327.5 @ 36", 42"	141.7 @ 24"	327.5 @ 36", 42"
Compression, hp			
Meeker Hub	15,400 (ISO)[2]	---	31,150 (ISO)[3] (15,400 + 15,750)
Greasewood Hub	---	2,820 (ISO)	---
Bighole	30,000 (ISO)	---	65,850 (ISO) (30,000 + 35,850)
Wamsutter	20,620 (ISO)	---	38,420 (ISO) (20,620 + 17,800)
Arlington	---	---	---
Total Compression	66,020 (ISO)	2,820 (ISO)	135,420 (ISO)
Metering			
Meeker Hub	one receipt meter	---	one receipt meter
Greasewood Hub	---	one receipt meter	one receipt meter
Wamsutter	two receipt/delivery meters	two delivery meters	two receipt/delivery meters
Cheyenne Hub	four delivery meters	---	four delivery meters
Pressure Regulation	---	---	one/two regulators

[1] This mileage does not account for a "linking" pipeline between the Greasewood and Meeker Hubs. Delivery of WIC's 350 MMcfd to Entrega's proposed Meeker Hub Compressor Station would require about 7 miles of 24-inch-diameter pipeline.
[2] Entrega estimates of ISO hp. Entrega will finalize compression requirements after price negotiations are completed in mid-2005.
[3] Includes 12,600 (ISO) hp required to bring gas received from WIC up to Entrega's system inlet pressure requirements (1,280 psig).

4.3 Regional Route Alternatives

During its initial routing studies, Entrega identified and evaluated several "regional" route alternatives between the Piceance Basin and the Cheyenne Hub. Before selecting an alignment similar to what has now become its proposed route, Entrega considered several other regional alternatives.

1. the I-70 corridor from DeBeque to Denver, then north to Cheyenne;

2. a direct northeasterly route from the proposed Meeker Hub to the Cheyenne Hub following high voltage transmission lines over the Park Range in Colorado and the Medicine Bow Range in Wyoming; and

3. a shorter variation of the proposed alignment that would extend northeasterly from Baggs, Wyoming, to Arlington, Wyoming, and then follow the proposed route to the Cheyenne Hub.

Because of engineering and environmental constraints, Entrega discarded these three regional route alternatives for an alignment that parallels existing interstate pipeline facilities almost exclusively (the proposed route). When compared to the proposed alignment, Entrega's evaluation found that the three other alternatives would:

- require the acquisition of substantial amounts of new ROWs that would not be parallel to existing ROWs;

- cross difficult, high-elevation mountainous terrain that would result in higher construction costs, more waterbody and wetland crossings, and shorter construction seasons; and

- not meet Entrega's objective of including interconnections with existing interstate pipeline systems at Wamsutter.

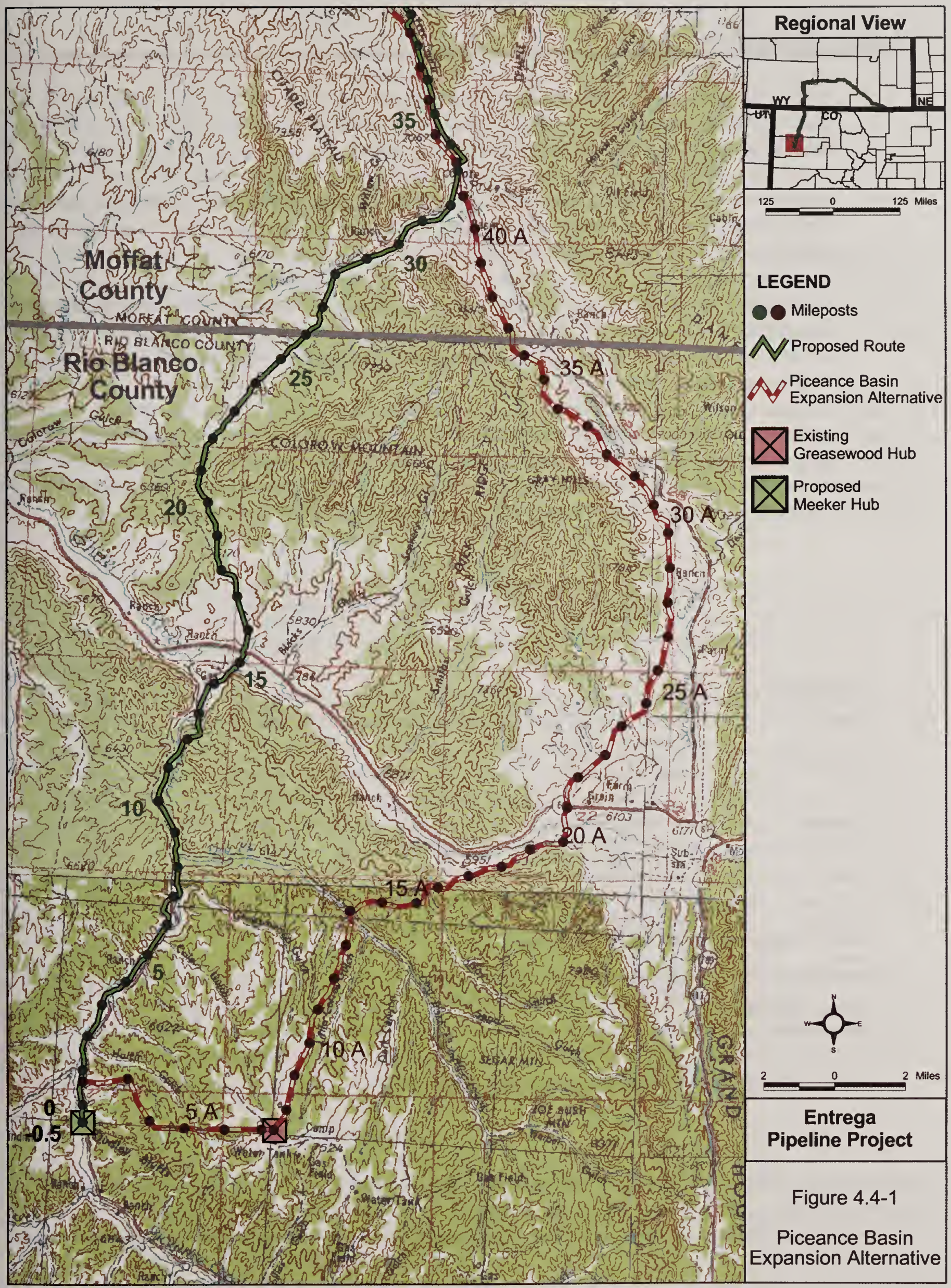
We generally agree with Entrega's evaluation of these "regional" route alternatives and have therefore eliminated them from further consideration.

4.4 Route Alternatives

The route alternative is defined as a route deviation that extends over several miles and is designated to address a single major environmental constraint, or multiple environmental issues, associated with the proposed action. The following route alternatives were carried forward for further evaluation based on public scoping input and unresolved issues.

4.4.1 PBEP Route Alternative

The PBEP Route Alternative (**figure 4.4-1**) was considered to be a potential route alternative to the first 33 miles of the EPP because it would:


Regional View
WY
NE
UT
CO
125 0 125 Miles
LEGEND
Mileposts
Proposed Route
Piceance Basin Expansion Alternative
Existing Greasewood Hub
Proposed Meeker Hub
Moffat County
Rio Blanco County
MOFFAT COUNTY
RIO BLANCO COUNTY
COLORADO MOUNTAIN
GRAY HILLS
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Entrega Pipeline Project
Figure 4.4-1
Piceance Basin Expansion Alternative

- avoid or minimize impacts to irrigated pastures and wetlands along Entrega's initial 14 miles of construction through the Piceance Creek drainage;

- address/avoid engineering issues along Entrega's proposed route north of the White River crossing (an area of pipeline congestion combined with steep slopes, rock outcrops, and a ravine associated with the Colorow Mountain crossing. MPs 19.5 to 20.6); and

- avoid known geologic hazards associated with the existing UBL immediately adjacent to Entrega's proposed route (two areas of soil subsidence hazards near channel crossings between Entrega's MPs 25.5 and 28, and an existing landslide area that caused local damage to the UBL near Entrega's MP 31 along Deep Channel Creek).

The results of our analysis are presented in **table 4.4-1**. This alternative was analyzed on the assumption that only the Entrega Pipeline would follow the PBEP route. A subsequent analysis was conducted that assumes that both the EPP and PBEP would either be collocated along Entrega's alignment or along WIC's alignment south of Entrega MP 33.2; (see section 4.4.2, Collocation Alternative, below).

Table 4.4-1
Comparison of Resources Crossed by Entrega's Proposed Action (MPs –0.5 to 33.2) and the PBEP Route Alternative

Analysis Parameter		Entrega Proposed Action	WIC PBEP Route
Miles Crossed			
TOTAL MILES PER ROUTE ALTERNATIVE		33.7	44.2
Utilities	Parallel to Existing Utilities (e.g., roads, pipelines, transmission lines).	29.4	9.7
Geology/ Soil	Slopes >15 percent	1.4	3.2
	Shallow Bedrock	16.7	21.0
	Potential Subsidence/landslide hazards?	Yes	Unknown
Wetlands	NWI Wetlands Crossed	3.8	0.5
Vegetation	Tall Shrublands (sagebrush, greasewood, oak)	18.1	22.7
	Pinyon-Juniper Woodland	6.2	14.5
Wildlife	Critical Big Game Winter Habitat	12.9	18.8
	Sage Grouse Winter Range	0.0	2.4
Agriculture	Pasture and Hayland	9.4	6.8
Special Management Areas	CDOW State Wildlife Areas	5.6	3.3
Sensitive Species	Bald Eagle Nesting Site (within 1 mile)	0	3.6
	Bald Eagle Roost Site (within 0.5 mile)	2.3	5.7
Number of Crossings			
Surface water	Piceance Creek Crossings	10	0
	Dry Fork Piceance Creek	0	1
	White River	1	1
	Listed Fish Critical Habitat (White River)	1	0

The following are the most important environmental impact differences between the two routes:

- Entrega's proposed route is 10.5 miles shorter than the alternative, and would parallel 19.7 more miles of existing utilities. This greater degree of utility collocation generally indicates overall better access, and a reduced requirement for temporary roadways for proposed action construction.

- The proposed route would cross 1.8 fewer miles of steeper slopes (greater than 15 percent), and 4.3 fewer miles of shallow bedrock construction than the alternative route. The reasons for these differences are that the alternative route would cross: 1) steep side slopes between the Meeker and Greasewood Hubs; 2) steep slopes on both sides of the Dry Fork of Piceance Creek; and 3) steep ascent/descent slopes just south of the White River.

- The proposed route would cross 4.6 fewer miles of tall shrublands (sagebrush, greasewood, oak), and 8.3 fewer miles of pinyon-juniper woodlands than the alternative. As a consequence, the long-term wildlife support functions of these shrubland and woodland communities would be reduced to a lesser extent than the alternative. The proposed action would cross 5.9 fewer miles of big game critical winter range (as defined by the CDOW), and would not cross sage grouse winter range as compared to 2.4 miles crossed by the alternative.

- The proposed route would cross Piceance Creek 10 times compared with no crossings for the alternative; would cross about 3.3 more miles of wetlands (consisting primarily of hay meadows and emergent wetlands); and would cross 2.3 more miles of CDOW Wildlife Area land.

In summary, the PBEB alternative route does not offer persuasive impact reduction advantages over the proposed route with respect to overall effects on wildlife habitat, particularly in upland areas where revegetation periods are very long (10 to 50+ years). Pipelines have previously been constructed within the Piceance Creek floodplain, and the construction areas for these pipelines are currently indistinguishable from adjacent undisturbed land where the pipelines cross pasturelands and emergent wetlands. Application of best management practices for soil management, stream crossings, and grading disturbed areas to maintain existing irrigation flow patterns would ensure that sediment increases in Piceance Creek would be very short term, and that vegetation productivity in irrigated pasturelands could be restored in 1 to 2 years. However, we also recognize the regional importance of the Piceance Creek floodplain for livestock grazing, winter use by big game, and the relatively greater wetland disturbance.

Because the perennial stream/wetland and wildlife habitat effects are different between the proposed and alternative route, we wish to maintain an open mind on which of the two represents the "better" route. Therefore, we are specifically requesting public comment to focus on this issue, and to provide supporting rationale for selection of one route alternative as environmentally preferred. We also invite suggestions for additional mitigation that the public believes would be necessary for construction along both routes.

4.4.2 Collocation Alternative

WIC proposes to construct and operate its PBEP along an alignment that would closely parallel the EPP over the majority of the distance between the PBEP origin at the Greasewood Hub to its terminus at

Wamsutter, Wyoming. The purpose of this alternative is to examine the potential surface disturbance reduction advantages that could be obtained by collocating the Entrega and Piceance Basin Expansion pipelines within overlapping construction ROWs (to the extent practical, due to technical and topographical constraints), rather than constructing both pipelines as separate and discrete facilities within a broader utility corridor. For purposes of this analysis, "collocation" is defined as constructing the two pipeline projects in the same construction ROW, with an offset of 25 to 50 feet from each other, and from other parallel pipelines. For the purpose of this analysis, we assumed that both projects could be constructed within the same 150-foot-wide construction ROW.

The collocation analysis was conducted within two study areas. The first study area (Danforth Hills South) encompasses the Entrega Pipeline (and the equivalent segment of the proposed WIC pipeline) from the origin of each pipeline to Entrega MP 33.2, where the two pipelines converge. The second study area (Danforth Hills North) extends from Entrega MP 33.2 north to Wamsutter, where the WIC pipeline terminates at an existing compressor station.

Danforth Hills South (MPs -0.5 to 33.2)

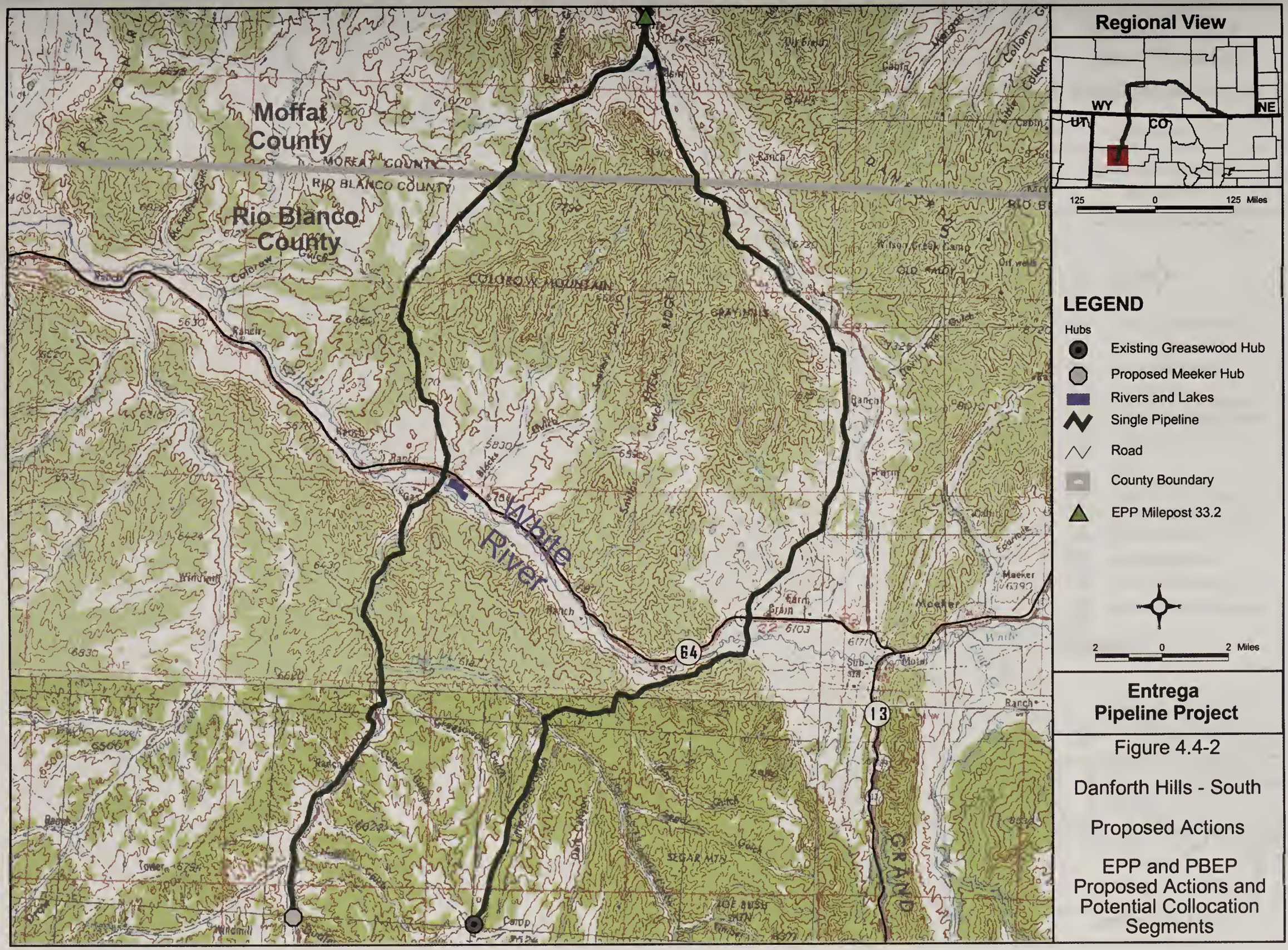
We compared selected resource effects for three construction alternatives:

1. EPP and PBEP proposed actions. Each project would be constructed along its proposed alignment between its origin and Entrega MP 33.2 (**Figure 4.4-2**). The surface disturbance and resource effects for each proposed action were then added together and compared with the collocation of the two projects in the same 150-foot-wide construction ROW.

2. EPP and PBEP Collocation along the EPP route. WIC would construct a 7-mile-long linking pipeline between the Greasewood Hub and an intersection with the Entrega Pipeline along Piceance Creek. Both projects would be collocated from this point northward to MP 33.2 except where terrain or other obstacles make collocation infeasible (**figure 4.4-3**). Where the two projects would not be collocated, we assumed that the EPP and WIC construction ROWs would average 125 and 100 feet wide, respectively. We marginally increased each project's ROW width over its proposed construction ROW width to account for extra workspace needs.

3. EPP and PBEP Collocation along the PBEP route. Entrega would construct a 7-mile-long linking pipeline between Piceance Creek and the Greasewood Hub. Both projects would be collocated to MP 33.2 except where terrain and other obstacles make collocation infeasible (**figure 4.4-4)**. The same assumption for extra workspace was applied.

Table 4.4-2 provides a comparison of the surface disturbance associated with the three pipeline construction options described above.



Entrega Pipeline Project

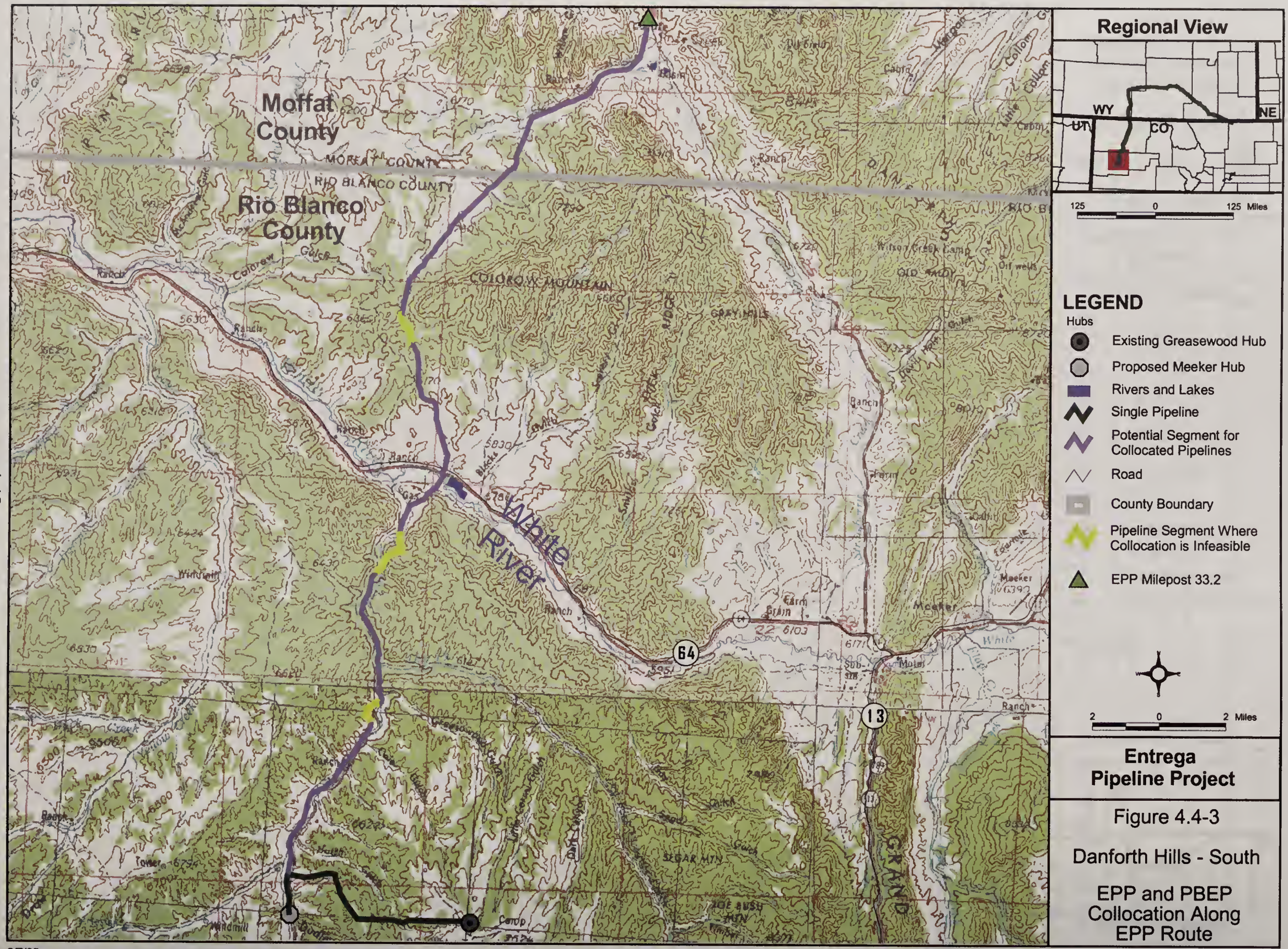
Figure 4.4-2

Danforth Hills - South

Proposed Actions

EPP and PBEP Proposed Actions and Potential Collocation Segments

2/7/05



Entrega Pipeline Project

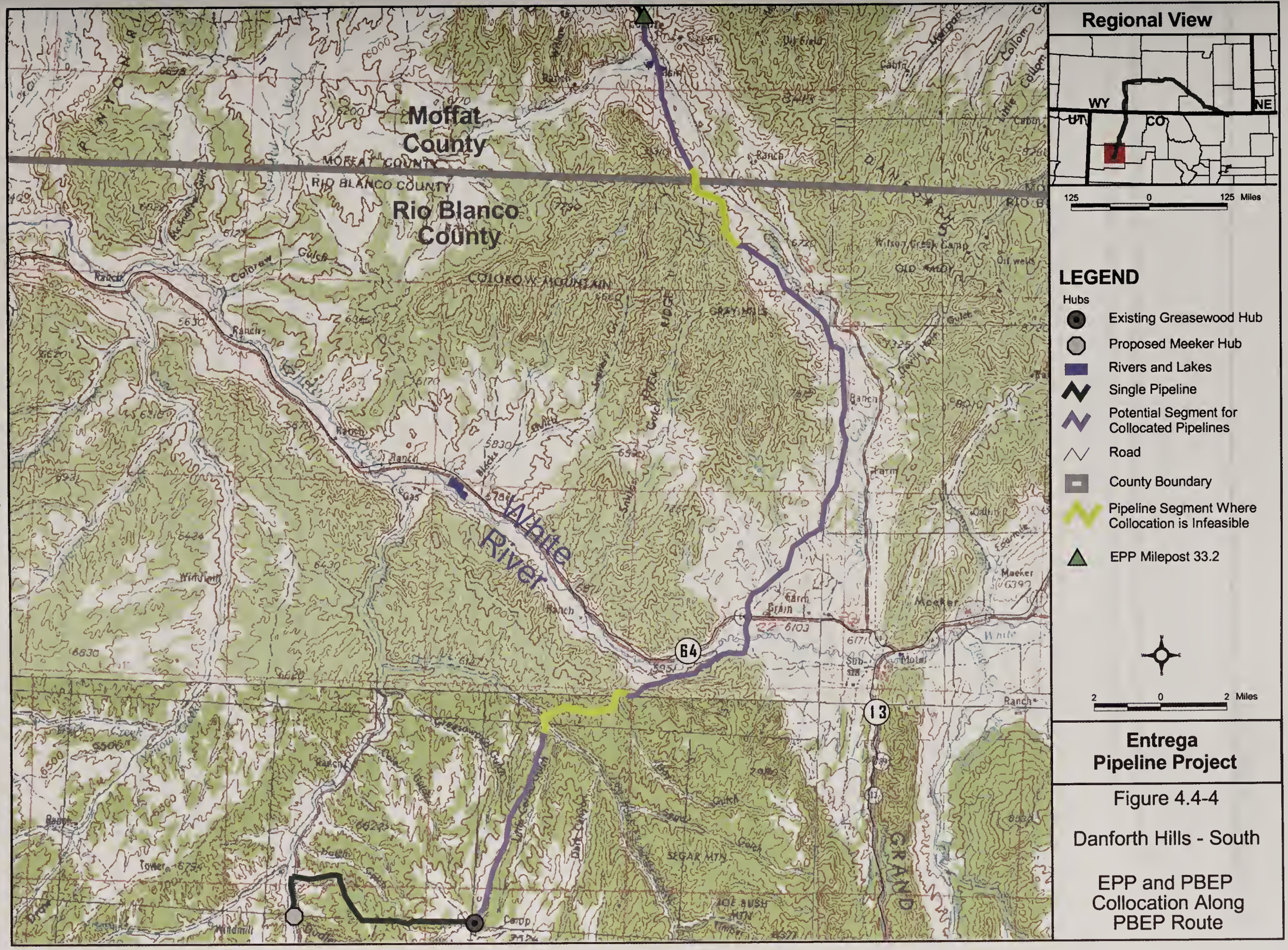
Figure 4.4-3

Danforth Hills - South

EPP and PBEP Collocation Along EPP Route

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Entrega Pipeline Project

Figure 4.4-4

Danforth Hills - South

EPP and PBEP Collocation Along PBEP Route

2/8/05

Table 4.4-2
Surface Disturbance and Stream Crossing Comparisons between the EPP and PBEP Proposed Actions and Two Collocation Alternatives within the Danforth Hills South Study Area (MPs -0.5 to 33.2)

Resource	Analysis Parameter	EPP and PBEP Proposed Actions (Combined Surface Disturbance)	EPP and PBEP Collocated Along EPP's Proposed Route[1,2,3]	EPP and PBEP Collocated Along PBEP's Proposed Route[1,2,3]
Surface Disturbance (Acres)				
TOTAL SURFACE DISTURBANCE PER ALTERNATIVE		953	707	835
Geology/Soils	Slope > 15%	32	44	68
Wetlands	Wetlands	61[4]	68[4]	10
Vegetation	Tall Shrubland (sagebrush, greasewood, oak)	535	346	442
	Pinyon-Juniper Woodland	206	192	275
Wildlife	Critical Big Game Winter Habitat	385	273	362
	Sage Grouse Winter Range	21	91	42
Land Use	Agriculture (Pasture/Hayland)	211	167	120
	Special Management Areas (CDOW Wildlife Areas)	125	115	87
Number of Crossings				
Perennial Streams	Piceance Creek	10	20	0
	Dry Fork Piceance Creek	1	0	2
	White River	2	2	2
Listed Fish Critical Habitat	White River	1	2	0

[1] Assumes 150-foot-wide construction ROW where collocation is possible; otherwise 125 foot-wide Entrega and 100-foot-wide WIC construction ROW where projects would be constructed independently.
[2] Includes approximately 7 miles of connecting pipeline between Greasewood Hub and Piceance Creek. Construction ROW is assumed to be 100 feet for WIC and 125 feet for Entrega for this connecting pipeline segment, depending on which applicant constructs the segment.
[3] Includes approximately 1.2 miles of Entrega proposed route (Meeker Hub to connecting pipeline between Entrega and WIC routes). Construction ROW is assumed to be 125 feet for Entrega only.
[4] NWI-mapped wetlands.

The important impact differences among the three construction alternatives are the similar to those already described for the EPP proposed action vs. the PBEP alternative route.

- Overall surface disturbance resulting from constructing the Entrega and Piceance Basin Expansion pipelines would be greater than either of the two collocation alternatives. Collocation along the Entrega alignment would result in 246 fewer acres of disturbance; collocation along the WIC alignment would result in 118 fewer acres of disturbance.

- Both collocation alternatives are estimated to require more construction across steep slopes than the combined proposed actions because the collocation alternatives cross steep slopes along the linking pipeline between Piceance Creek and Greasewood Hub that are not crossed by the proposed actions independently.

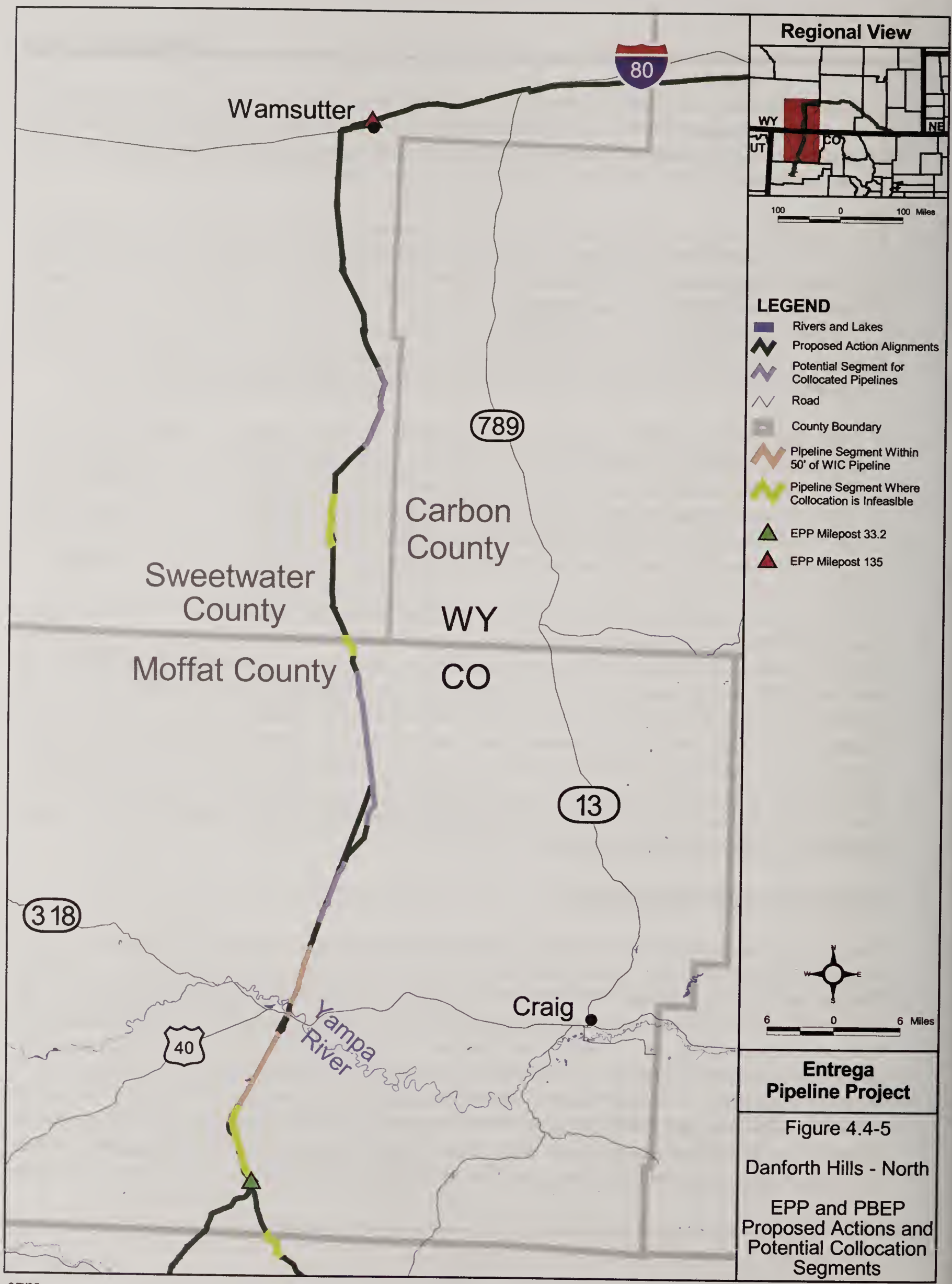
- Collocation along the PBEP route would result in a decrease of upland shrubland and an increase of woodland wildlife habitat disturbance (93 and 69 acres, respectively) compared to constructing the two projects independently; collocation along the EPP route would result in about 203 fewer acres of shrubland and woodland habitat disturbance. Similarly, collocation along the PBEP route would result in nearly same level of disturbance to critical big game winter habitat as constructing the two projects independently; collocation along the EPP alignment would result in disturbance of about 112 acres less acres of crucial big game winter habitat than the proposed actions independently.

- Collocation along the PBEP alignment would require no crossings of Piceance Creek; construction of the projects independently would require 10 Piceance Creek open-cut crossings; collocation along the EPP alignment would require 20 Piceance Creek open-cut crossings. Collocation along the EPP would result in approximately 44 acres less disturbance of agricultural (hayland/pastureland) compared to that of constructing the two projects independently; collocation along the PBEP alignment would result in about 91 acres less hayland/pastureland disturbance than constructing the projects independently.

In summary, the long-term wildlife habitat reduction tradeoffs between following the predominantly upland route (PBEP) must be weighed against the short-term water quality and aquatic life impacts of constructing across Piceance Creek multiple times, and restoring the associated irrigated hayland/pasturelands as previously discussed in section 4.4.1. Construction of a new 7-mile-long linking pipeline between the Greasewood Hub and the Piceance Creek Valley to accomplish either of the collocation alternatives would represent a new pipeline ROW in relatively steep terrain requiring long recovery times (pinyon juniper woodlands and sagebrush are the dominant cover types in this segment). Finally, an EPP collocation alternative along the PBEP alignment would require Entrega to expend additional materials and labor to construct an additional 11 miles of pipe as compared to its currently proposed alignment. We invite public comment on these collocation alternatives.

Danforth Hills North (MPs 33.2 to 135)

After crossing the Danforth Hills, where the Entrega and WIC pipelines would be located in separate ROWs because of terrain constraints, both pipelines would be constructed adjacent to the existing UBL and Kinder Morgan pipelines from Entrega MPs 40.9 to 135. **Figure 4.4-5** illustrates the relative locations of the proposed EPP and PBEP projects in this existing utility corridor. The two projects are currently proposed for collocation across CDOW lands north and south of the Yampa River. **Figure 4.4-5** illustrates areas where collocation is considered infeasible because of terrain limitations (narrow ridgelines and incised drainages). Because both the EPP and PBEP would be constructed adjacent to existing pipelines, most of the goal of pipeline project consolidation into the same utility corridor would be accomplished by the proposed actions. However, we received several comments during public scoping concerning sage grouse population effects from loss of sagebrush habitat, and sage grouse habitat fragmentation because of utility corridor expansion.



Entrega Pipeline Project

Figure 4.4-5

Danforth Hills - North

EPP and PBEP Proposed Actions and Potential Collocation Segments

2/7/05

The EPP and PBEP cross about 28 miles of important sage grouse breeding and brooding areas (as defined by the CDOW and WF&G) north of the Yampa River (see **table 4.4-3**).

Table 4.4-3
Milepost Intervals Considered for EPP and PBEP
Collocation to Reduce Sage Grouse Breeding and Brooding Habitat Impacts

Milepost Interval	Miles
MPs 59 to 65	6
MPs 69 to 83	14
MPs 104 to 112	8
Total	**28**

By constructing the two projects together in the same 150-foot-wide construction ROW, we expect that removal of sage grouse habitat could be reduced, ideally, by 254 acres, or about 33 percent as compared to constructing the two projects along their currently proposed alignments. Sagebrush shrubs on which the sage grouse depends recover very slowly (15 to 50 years), and fragmentation of sage grouse habitat from multiple pipelines in the same utility corridor may adversely affect reproductive success and survival of this species over the long term. We will continue to evaluate the feasibility of collocating the two proposed pipelines within 40 to 50 feet of each other where the two projects would cross these 28 miles of sage grouse breeding and brooding habitat. We recognize that collocation would require one or both projects to adjust their current alignments to achieve this result. We also recognize that other factors (e.g., cultural resource sites, local terrain, other pipelines in the corridor, construction of both projects in the same construction season) exert a significant influence on the practicality of collocation in the intervals identified in **table 4.4-3**. The results of our analysis will be presented in the Final EIS.

4.5 Route Variations

Route variations differ from system alternatives or major route alternatives in that they are identified to avoid or reduce impact on site-specific resources or to resolve localized issues. Site-specific resources include cultural resource sites, wetland areas, and severe terrain conditions. Localized issues might include landowner requests. While route variations may be a number of miles long, most are short and are located in relative proximity to the proposed route. The route variations discussed below document the rationale for changes in Entrega's proposed route (e.g., Pine Tree Gulch Variation), or provide comparative information where there are still unresolved landowner issues. Where these variations have been incorporated into Entrega's proposed route, they are part of our environmental analysis in chapter 3.0. The route variations are discussed from west to east.

4.5.1 Pine Tree Gulch Variation (Current Proposed Action) (MPs 32.1 to 39.9)

Figure 4.5-1 illustrates the relationship between Entrega's original alignment and the Pine Tree Gulch Variation (current proposed route) which largely parallels Moffat County Road 57. Entrega modified its original alignment in response to a landowner request to avoid construction within grazing lands and to avoid engineering and construction constraints associated with a deeply incised gulch and water developments on the floor of the gulch. While avoiding grazing land and water development impacts, this variation makes a steep ascent of a ridge that would be viewed over the long term from County Road 23, and the descent slope between MPs 38 and 39 also would be highly visible to south bound motorists on Moffat County Road 57; both the ascent and the descent would be slow to revegetate. The Pine Tree Gulch Variation also crosses within 150 feet in front of a residence at approximately MP 35.3. This refinement of Entrega's original alignment was the result of extensive interactions among Entrega, the affected landowners, the BLM, and the Moffat County Commissioners.

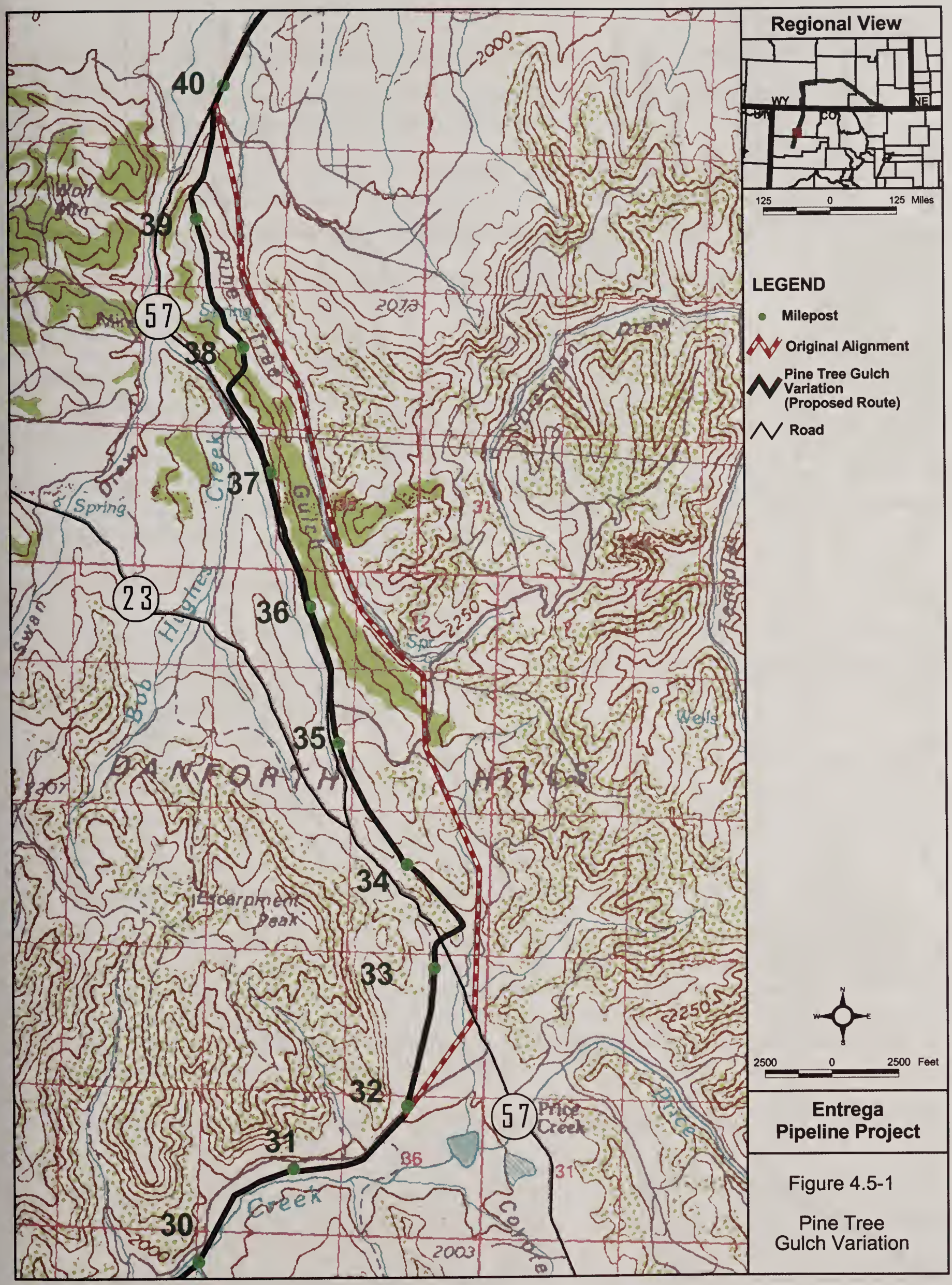
4.5.2 Park Meadows Variation (MPs 294.1 to 295.8)

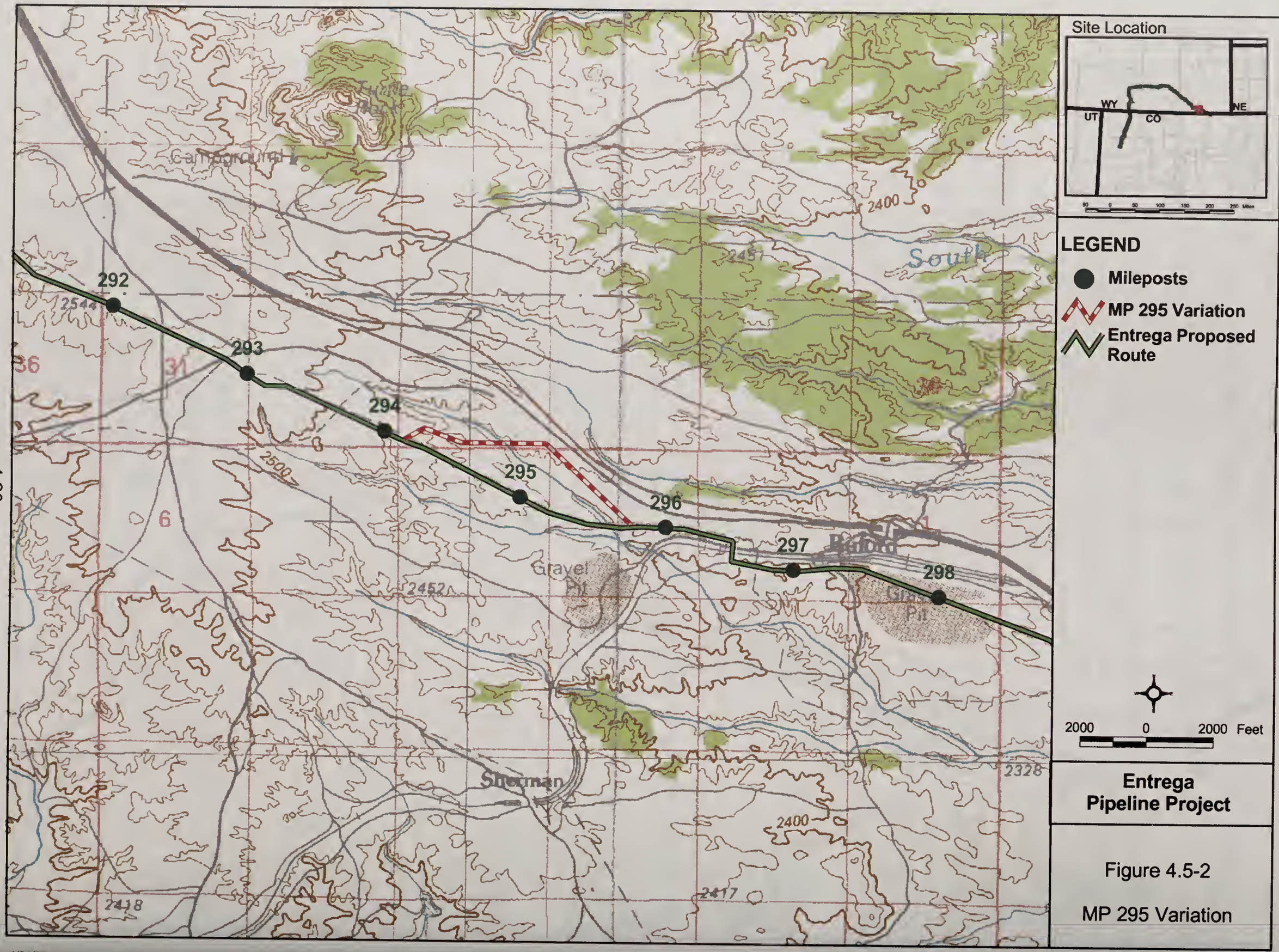
Entrega developed the Park Meadows Variation in response to landowner concerns that the original alignment would impact their property (**figure 4.5-2**). Although the original alignment would parallel six existing utility lines (four gas pipelines and two fiber optic lines are currently within the corridor), residents were concerned that an additional pipeline through the area would further encumber their property. Concerns raised by landowners (comments were received from Dan and Carol Schwartz and Lurleen Flores) included unrepaired damages and unsatisfactory restorations from previous pipeline construction, unauthorized access to their properties, potential damages to native plants and wildlife, and the utility corridor's further encroachment on multiple properties.[1] A letter received at FERC on June 14, 2004, from Dan Schwartz of the Park Meadows Landowners Association also indicated expanding the pipeline ROW through the subdivision would reduce the ability of the landowners to subdivide their properties.

The Park Meadows Variation is located along property boundaries, thus the severance of multiple properties would be avoided. Subsequently, the Shimmerhorn Ranch filed objections to the variation, stating concerns about the stream crossings with associated beaver ponds, rock outcrops, and the loss of mature pine trees on ranch property, as well as unrepaired damages and unsatisfactory restorations from previous pipelines. A letter from the Shimmerhorn Ranch received at FERC September 13, 2004, also noted that the variation would compromise potential construction sites on the most valuable portion of the property, thus limiting the ability to subdivide the property in the future. Entrega currently proposes to follow the original alignment parallel to existing utilities, which would expand the width of the corridor on the Schwartz property by 50 feet for a distance of about 660 feet. The width of the ROW for other landowners in the Park Meadows subdivision also would expand by 50 feet.

We examined the input from both landowners with different view points, reviewed the available environmental information contained in resource reports and photo-based alignment sheets, and the results

[1] The Schwartz's home is on the north side and facing the utility corridor. Construction is proposed on the south side of the corridor, with the edge of the construction ROW more than 325 feet away from the house at its closest point.


Regional View
WY
NE
CO
125 0 125 Miles
LEGEND
Milepost
Original Alignment
Pine Tree Gulch Variation (Proposed Route)
Road
2500 0 2500 Feet
40
39
38
37
36
35
34
33
32
31
30
57
23
Pine Tree Gulch
Spring Creek
Price Creek
Escarpment Peak
2000
2250
2003
Entrega Pipeline Project
Figure 4.5-1
Pine Tree Gulch Variation



Entrega Pipeline Project

Figure 4.5-2

MP 295 Variation

4-20

1/31/05

of the aerial reconnaissance. We concluded that the proposed action route located adjacent to the existing pipeline corridor is the preferred pipeline location for the following reasons:

1. the long-term environmental effects of constructing along the alternative route are greater than those along the proposed route because of greater length, the removal of more riparian vegetation, and more difficult construction and revegetation conditions (steep south facing slopes on shallow soils); and

2. the potential future land use preclusion effects are greater for the alternative than for the proposed route.

The proposed action represents an incremental 50-foot expansion of an area that has already been committed to utility uses. While this expansion represents an added utility commitment burden to the affected owners, these current utility uses do not directly affect the location or use of the nearest residential structure, which is approximately 375 feet north of the proposed pipeline center line. Approximately one-half of the variation would be located along a property line where there would less conflicts with future development planning. However, the remaining one-half of the segment (about 0.8 mile) would cross presently undeveloped areas where a new utility easement could affect parcel sizes and the locations of future development.

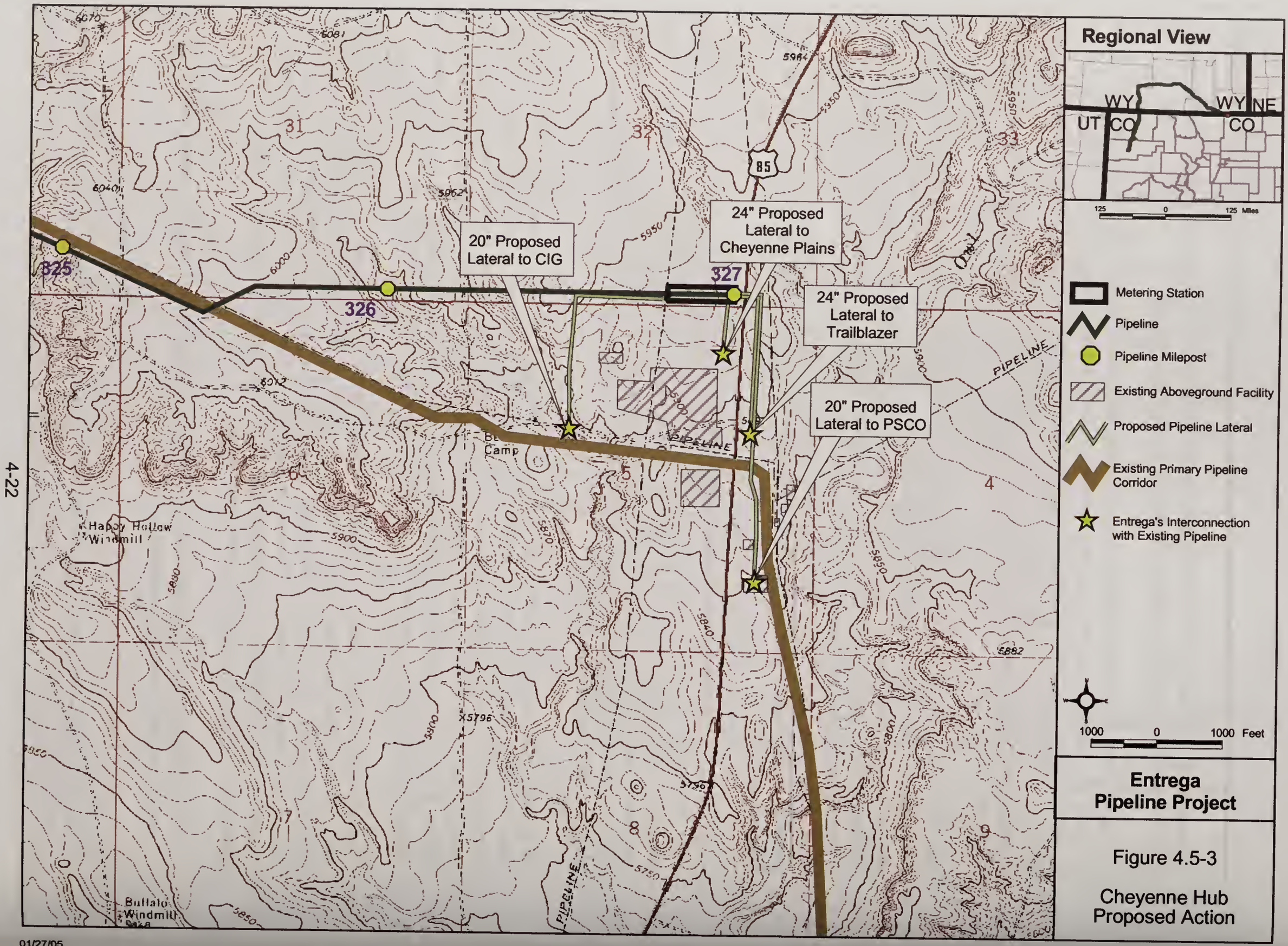
4.5.3 Cheyenne Hub Variations (MPs 325 to 327)

Entrega proposed the Cheyenne Hub Variations in response to landowner (Lazy D Grazing Association) concerns about the final 1.6 miles of the proposed pipeline route, the site of the Cheyenne Hub Metering Station at the terminus of the pipeline, and the routing of interconnecting laterals needed to deliver gas to shippers with nearby pipeline facilities.

As proposed, Entrega's route would cross to the north side and diverge from the existing pipeline corridor at about MP 325.4, bending eastward along the north side of the section line for about 1.6 miles to terminate on the west side of U.S. 85. This would place the proposed Cheyenne Hub Metering Station north of the existing CIG Cheyenne Compressor Station on Colorado State land administered by the State Land Board (**figure 4.5-3**). From that location, Entrega would construct four delivery laterals of various diameters to interconnect with existing pipelines that pass through or originate at the Cheyenne Hub.

The Lazy D Grazing Association (Association) listed its environmental concerns in correspondence with the office of Senator Wayne Allard dated November 18, 2004, and in subsequent discussions with Entrega, representatives of the Colorado Land Board, and Senator Allard's staff on December 10, 2004. The Association prefers that Entrega's pipeline not diverge from the utility corridor at MP 325.4. Instead, it prefers that Entrega's pipeline continue to parallel the existing corridor that passes immediately south of the Cheyenne Compressor Station for the following reasons:

1. if the new disturbance is consolidated and overlaps with prior disturbances, it would reduce overall impact and avoid new utility encumbrances;


20" Proposed Lateral to CIG
24" Proposed Lateral to Cheyenne Plains
24" Proposed Lateral to Trailblazer
20" Proposed Lateral to PSCO
325
326
327
85
Happy Hollow Windmill
Buffalo Windmill
Camp
PIPELINE
Regional View
WY
NE
UT
CO
125 0 125 Miles
Metering Station
Pipeline
Pipeline Milepost
Existing Aboveground Facility
Proposed Pipeline Lateral
Existing Primary Pipeline Corridor
Entrega's Interconnection with Existing Pipeline
1000 0 1000 Feet
Entrega Pipeline Project
Figure 4.5-3
Cheyenne Hub Proposed Action

4-22

01/27/05

2. locating a new pipeline (Entrega) north of the Cheyenne Compressor Station would effectively create a new utility corridor and future projects would be less constrained to follow the existing corridor. This would encourage more development north of the existing CIG facilities and a continuing trend of rangeland conversion to industrial uses;

3. two of the proposed laterals would be located on the east side of U.S. 85 which represents an expansion of industrial uses outside the existing industrial area on the west side of U.S. 85; and

4. livestock grazing values would be decreased on Association land as well as leased Colorado State Land because of slow revegetation rates on disturbed soils.

The Association also contends that locating Entrega's facilities as proposed would increase the risk of natural gas fires and explosions that could affect the Association's headquarters building (located less than 1 mile north of Entrega's proposed Cheyenne Hub Metering Station).

At a December 10, 2004, meeting with the Association, representatives of the Colorado State Land Board, and Senator Allard's staff, Entrega committed to studying two alternatives that would affect both the location of the final portion of its proposed route and the Cheyenne Hub Metering Station. Under Variation A, Entrega's pipeline would continue to parallel the existing pipeline corridor to a terminus west of U.S. 85. This alignment would place the proposed Cheyenne Hub Metering Station on private property immediately south of the Cheyenne Compressor Station; the four delivery laterals would extend to the same four interconnection points as for the proposed action. **Figure 4.5-4** compares this variation with the proposed action.

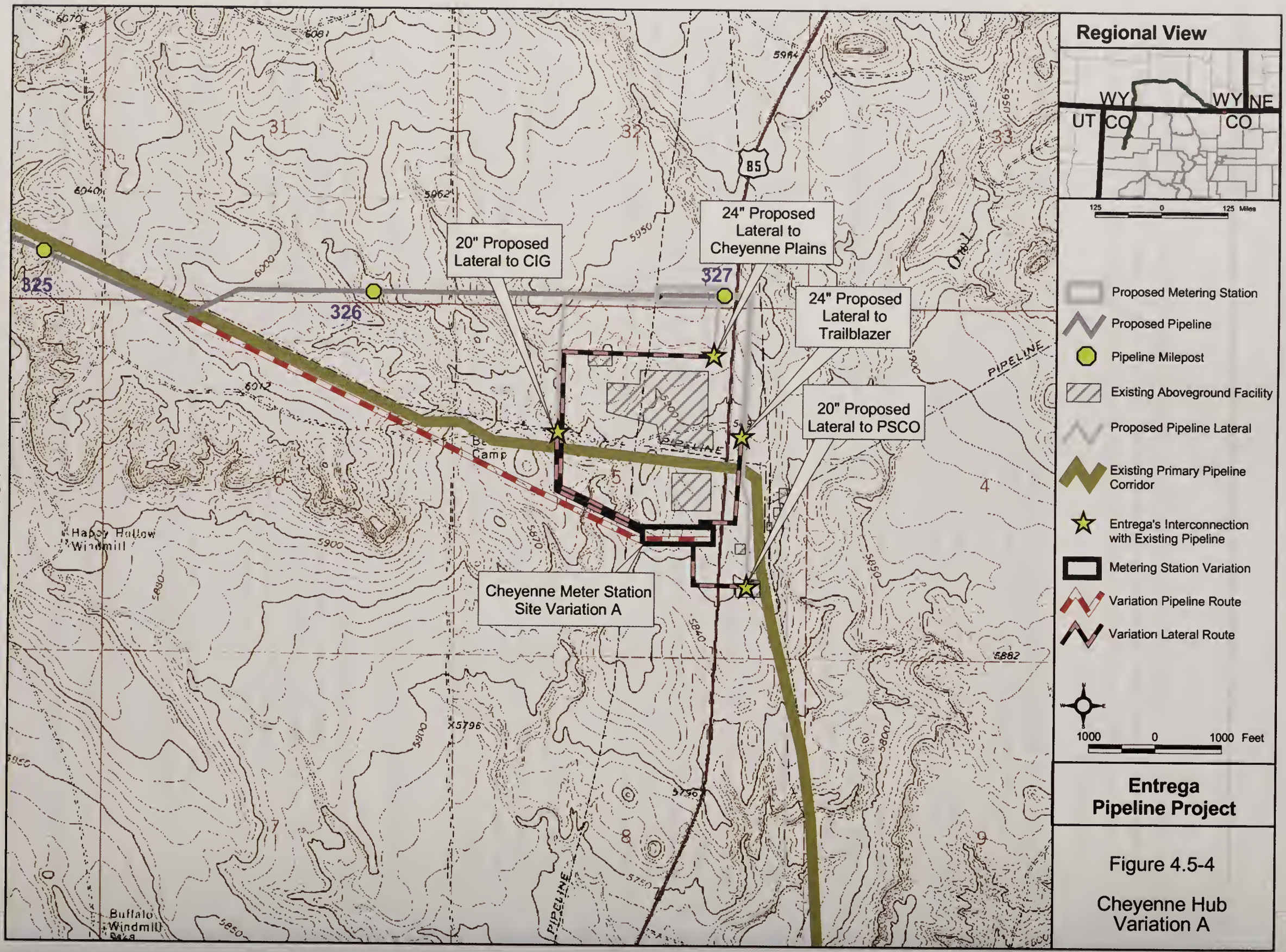
Under Variation B, Entrega's pipeline would diverge from the existing pipeline corridor (similar to the proposed route), but would bend eastward to follow the south side of the section line, again terminating on the west side of U.S. 85. This alignment would place the Cheyenne Hub Metering Station on private property immediately south of the proposed location (on the north side of the section line). The four delivery laterals would follow routes very similar to those for the proposed action (see **figure 4.5-5**).

The results of Entrega's analysis can be summarized by focusing on three factors:

- Use of either variation would shift the proposed 4.7-acre metering station from Colorado State land to private property. This also would reverse the ratio of private to state land disturbed by construction to the disadvantage of private property (i.e., either variation would disturb about 50 percent more private property acreage then would the proposed action, while the proposed action would disturb more than twice as much public land as either variation).

- Of the two variations, only Variation A would require additional pipeline (an additional 0.3 mile of 42-inch-diameter mainline and an additional 0.1 mile of delivery lateral).

- Use of Variation A would increase the number of existing utility lines that would need to be crossed from 19 (for either the proposed action or Variation B) to 30.

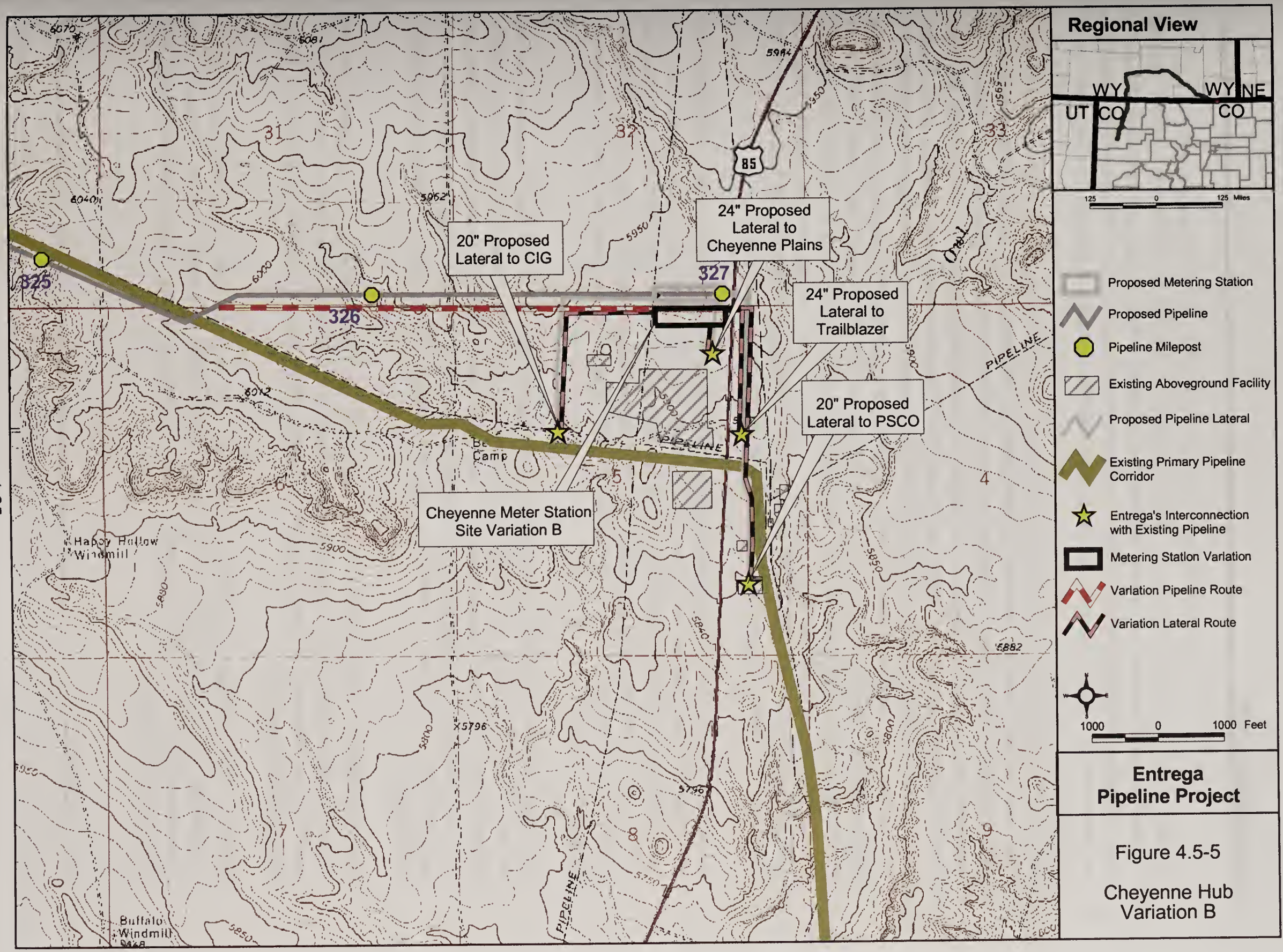


Entrega Pipeline Project

Figure 4.5-4

Cheyenne Hub Variation A

01/27/05


20" Proposed Lateral to CIG
24" Proposed Lateral to Cheyenne Plains
24" Proposed Lateral to Trailblazer
20" Proposed Lateral to PSCO
Cheyenne Meter Station Site Variation B
325
326
327
85
Regional View
WY
WY
NE
UT
CO
CO
125 0 125 Miles
Proposed Metering Station
Proposed Pipeline
Pipeline Milepost
Existing Aboveground Facility
Proposed Pipeline Lateral
Existing Primary Pipeline Corridor
Entrega's Interconnection with Existing Pipeline
Metering Station Variation
Variation Pipeline Route
Variation Lateral Route
1000 0 1000 Feet
Entrega Pipeline Project
Figure 4.5-5
Cheyenne Hub Variation B
Happy Hollow Windmill
Buffalo Windmill
PIPELINE

01/27/05

Entrega states that use of Variation A would increase the difficulty of construction, present potential construction safety hazards, and greatly increase its construction costs. Additionally, its analysis concludes that the proposed action (locating the pipeline and metering station as proposed) would minimize impacts on private lands. As a result, Entrega has not agreed to alter the location of its originally proposed route or metering station site.

The three routes are similar with regard to environmental resource impacts (although Variation A would disturb about 3.3 more acres of rangeland vegetation compared to the proposed action or Variation B). There are no severe or unusual terrain conditions that would prevent construction of either the proposed action or one of the variations. While we typically favor the placement of new pipelines along existing corridors, it is understandable that new facilities cannot always follow existing corridors. To terminate the Entrega mainline on the north side of the Cheyenne Compressor Station, diverging from the existing pipeline corridor is necessary. If the goal is to maximize the use of state/public land (thereby minimizing impacts on private property owners), then siting the final portion of the pipeline and metering facilities as Entrega has proposed would appear to satisfy the goal in a direct and cost-effective manner. Given the distance between Entrega's facilities and the Association's headquarters building, we don't agree with the Association that safety is an issue relevant to selection of one route over another.

However, if limiting the northward spread of the collective Cheyenne Hub facilities is the primary objective, then siting Entrega's proposed facilities on the south side of the Cheyenne Compressor Station would be more desirable. This would (as stated by the Association) confine new surface disturbance to the existing corridor, and reduce both utility encumbrances and impact on the grazing value of the land. It also would appear to place development within the Hub itself, rather than on its periphery, and would thereby limit rangeland conversion.

We should add that constructing new crossings of existing pipelines owned by others is a routine activity performed as part of virtually all interstate pipeline projects. On its face, Entrega's statement that a larger number of existing pipeline crossings would be required to construct its project using Variation A does not sway our preference that new pipelines be constructed parallel to existing utilities, particularly where land use conversion is an issue. However, the economic aspects of the project are always an important consideration.

On a final note, we lack current information concerning any planned aboveground expansions at the Cheyenne Hub. Such information could potentially influence the location of future pipelines that would either cross the area or connect with existing pipelines, thereby influencing the selection of the proposed action versus one of the variations.

Therefore, we are specifically requesting public comment to focus on the routing issue for the final 1.6 miles of Entrega's proposal. We request that commentors provide supporting rationale concerning the environmental costs and benefits associated with use of Entrega's proposed route and metering station site versus one of the variations.

4.6 Aboveground Facilities - Bighole Compressor Station (MP 76.3)

The only issue associated with the proposed aboveground facilities involved the proposed location of the Bighole Compressor Station. During public scoping, the CDOW requested that an alternative compressor station site be evaluated a) because of the proximity of the proposed site to sage grouse leks and associated brooding areas, and b) station operational noise. After further consultation with the CDOW and a review of areas along the proposed route both north and south of the site, we are satisfied that the proposed location represents the best compromise for minimizing impacts associated with siting a new compressor station. Our review found that high-quality sage grouse habitat lies both north and south of the proposed site. The selected site has the attribute of an existing road, therefore, no new access roads would be required, and year-round access would be available on the existing county road system. This would avoid the necessity for creating a new access road through high-quality habitat at another location. For these reasons, we are not recommending an alternative site for the Bighole Compressor.

CONCLUSIONS AND RECOMMENDATIONS

CHAPTER 5

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions of the Environmental Analysis

The conclusions and recommendations presented in this section are those of the FERC environmental staff. While our conclusions and recommendations were developed with input from the BLM as a cooperating agency, the BLM will present its own conclusions and recommendations in its ROD for the EPP.

Review of the information provided by Entrega and further developed from data requests; field investigations; scoping; literature research; alternatives analysis; and contacts with federal, state, and local agencies, and individual members of the public indicates that the proposed project would result in limited adverse environmental impact during construction and operation. We conclude that if the project were constructed and operated in accordance with applicable laws and regulations, Entrega's proposed mitigation, and the additional mitigation recommendations presented below, it would be an environmentally acceptable action. Although many factors were considered in this determination, the principal reasons are:

- 94 percent of the proposed pipeline would be located within 300 feet of existing pipeline, utility, and road ROWs. Where Entrega's proposed pipeline would parallel existing pipelines, it would generally be installed at a 40-foot offset from the nearest pipeline centerline;

- the project would be consistent with or in conformance with federal resource management plans;

- Entrega would implement a number of resource- or activity-specific plans, procedures, and agreements to protect natural resources, avoid or limit environmental impact, and promote restoration of all disturbed areas during construction and operation of the project;

- the use of the HDD method would avoid disturbances to the beds and banks of the White and Yampa Rivers;

- the appropriate consultations with the FWS, the SHPOs, the BLM, other affected land management agencies, and any appropriate compliance actions resulting from these consultations, would be completed before Entrega would be allowed to begin construction in any given area; and

- an environmental inspection program would be implemented to ensure compliance with all mitigation measures, Certificate conditions, and requirements contained in the POD.

In addition, we have developed specific mitigation measures (including a compliance monitoring program) to further reduce the environmental impact that would otherwise result from construction of the project. The additional studies or field investigations which we recommend typically result in site-specific mitigation and further reduction of impact; therefore, we are recommending that these mitigation measures be attached as conditions to any Certificate issued by the Commission. These mitigation measures are presented in section 5.6. We believe that the recommended mitigation measures would reduce potential environmental impacts from Entrega's proposed action to less than significant levels.

5.2 Alternatives Considered

No Action or Postponed Action

The No Action and Postponed Action Alternative were considered. While the No Action or Postponed Action Alternative would eliminate the environmental impacts identified in this EIS, U.S. markets would be denied access to the 1.5 Bcfd of natural gas that Entrega proposes to transport to its system. Furthermore, natural gas development in the Piceance and neighboring basins could be hindered by a lack of interstate pipeline transportation capacity options available to ship gas to markets. Consequently, new and existing natural gas users would need to obtain natural gas from other sources, use alternative energy sources, or use alternative fuels.

In this instance, the first option would likely require the construction of additional and/or new pipeline facilities in other locations to transport natural gas supplies currently being developed in the Piceance Basin or planned for development/production in the near future. If other natural gas facilities are approved and constructed, each project would result in its own set of specific impacts that could be less or greater than those associated with the current proposal.

The second option (use of alternative energy sources) is infeasible because the use of solar, hydroelectric, or other energy sources (e.g., geothermal, fuel cells) has not been developed to the point where they would be viable energy supply alternatives to the proposed project.

The third option (applicable primarily to large industrial or commercial users) would require natural gas customers to apply for and seek regulatory approval to use other fuels. Assuming regulatory approval to use alternative fuels could be obtained within the required time frames, it could result in increased use of less clean-burning fuels (such as coal) and a corresponding increase in air pollutant emissions.

System Alternatives

Existing natural gas pipelines that pass through, or near the proposed Meeker Hub were evaluated for their ability to convey the proposed EPP volumes. We determined that none of the existing pipeline systems have sufficient remaining capacity to convey the volumes proposed by Entrega.

The potential for shipping Entrega's gas on WIC's proposed Piceance Basin Expansion Project (PBEP) pipeline that would originate at the Greasewood Hub (7 miles east of Entrega's origin) and terminate at Wamsutter, Wyoming was also evaluated. While the WIC design (pipeline diameter, compressor stations) could be modified to accommodate Entrega's gas volumes, the WIC project would not transport gas east of Wamsutter, and therefore would not meet Entrega's purpose and need. Further, the two projects have reached agreements with different shippers for gas receipt and delivery at different interconnection points at different pressures, under different terms and conditions, etc. We concluded that no existing or proposed pipeline system would meet Entrega's purpose and need.

Route Alternatives - Piceance Basin Expansion Route Alternative

We evaluated the option of routing the Entrega Pipeline along WIC's currently-proposed alignment between the Greasewood Hub and the area where the two proposed routes intersect near Entrega MP 33.4. The alternative would require a 7-mile-long linking pipeline between the Meeker and Greasewood Hubs, and would then follow the route proposed by WIC for its PBEP for another 36 miles. This alternative was evaluated to:

- avoid or minimize impact on sensitive resources (wetlands, wet meadows, and irrigated hayfields[1] along Entrega's initial 14 miles of construction through the Piceance Creek drainage); and

- address/avoid engineering issues (i.e., an area of pipeline congestion combined with steep slopes, rock outcrops, and a ravine associated with the Colorow Mountain crossing [MPs 19.5-20.6], and an area of soil instability and geologic hazards at the north end of the Indian Valley [MPs 25.5-28]).

After conducting the impact analysis, we are seeking further public and agency input before recommending a preferred route for this segment of Entrega's proposal. Our analysis identified different kinds of environmental impacts when comparing the proposed and the alternative pipeline routes. By following the proposed route, a larger number of stream crossings and more wetland and pasture disturbance would result, but vegetation recovery times in these areas would be short-term (less than 5 years). The alternative route (WIC's proposed route) would disturb much less wetland and pasture, but more shrubland and woodland wildlife habitat would be cleared. Shrubland and woodland recovery times would be long-term (10 to 50+ years). Plus, the alternative would be almost 10 miles longer than Entrega's proposed route.

Route Variations

Three minor route variations from Entrega's proposal were analyzed to determine whether the variations were environmentally preferable to the proposed route.

1) Pine Tree Gulch Variation. This variation is recommended because it minimizes livestock and water development impacts. This variation has been adopted by Entrega.

2) Park Meadows Variation. This variation is not recommended because predicted land use impacts would be reduced by routing the pipeline along an existing pipeline corridor rather than creating a new pipeline route that would affect new landowners. This variation has not been adopted by Entrega.

3) Cheyenne Hub Variations. We are seeking additional public and agency input before recommending a preferred route at this location.

[1] Much of the hayfields are administered by the Colorado Division of Wildlife as the Piceance State Wildlife Area.

Aboveground Facilities

The possibility of relocating the Bighole Compressor Station was evaluated; however, no site offered a clear environmental advantage over the proposed site. Consequently, no alternative site was recommended.

In conclusion, we determined that the proposed project is environmentally preferable to any of the alternatives considered, with the exception of two route segments (the Piceance Basin Expansion Route Alternative and Cheyenne Hub Variations). In these areas, we are seeking additional input from the public, other government agencies, and Entrega.

5.3 Significant Unavoidable Impacts

The project would result in limited adverse environmental impact. Effects on all environmental resources were evaluated to determine any significant impact that would remain so after application of the mitigation proposed by Entrega. We then considered practical, appropriate, and reasonable measures which would further reduce potential project-related impacts. As a result, we developed additional mitigation which we are recommending be included as specific conditions to any Certificate issued by the Commission. Our analysis indicates that with the application of Entrega's mitigation and implementation of our recommendations below, the proposal would result in no significant impact that is unavoidable. Further, we believe that all environmental impacts would be reduced to less than significant levels if the proposed and recommended mitigation is fully implemented.

5.4 Irreversible/Irretrievable Commitment of Resources; Short- and Long-Term Uses of the Environment

The major nonrenewable resources that would be consumed by the proposed project are fossil fuels used to power construction vehicles and, over the life of the project, fossil fuel and electricity to power the pipeline itself (the proposed compressor stations would be natural-gas powered). Theoretically, the pipeline components could be reclaimed at the end of the pipeline's operational life. However, there would be a number of irretrievable resources committed to the proposal if the necessary authorizations are granted. The primary resources irretrievably lost would include soils (resulting from water and wind erosion in disturbed areas); water (used for dust control); crop/rangeland production (lost or reduced for one season or more); land use (aboveground facilities would replace rangeland and agricultural land for the life of the project); and wildlife habitat (temporary to long-term loss). The loss of cultural and paleontological resources also would be irretrievable, if allowed to occur.

As discussed in section 3.11, the proposed project has been designed to meet or exceed all safety requirements, and the potential for irreversible damage to the environment during operation is slight.

The proposed project would transport significant volumes of natural gas to customers in the central U.S. Its operation would be consistent with federal policies encouraging competitive natural gas transportation services. For these reasons, the limited irreversible and irretrievable resource commitments are acceptable.

5.5 FERC Staff Recommended Mitigation

If the Commission approves the EPP, we recommend that the following measures be included as specific conditions of the Certificate. We believe that these measures would further mitigate the environmental impact associated with the construction and operation of the proposed project.

1. Entrega Gas Pipeline Inc. (Entrega) shall follow the construction procedures and mitigation measures described in its application, supplemental filings (including responses to staff data requests), and as identified in the environmental impact statement (EIS), unless modified by the Commission Order. Entrega must:

    a. request any modification to these procedures, measures, or conditions in a filing with the Secretary of the Commission (Secretary);
    b. justify each modification relative to site-specific conditions;
    c. explain how that modification provides an equal or greater level of environmental protection than the original measure; and
    d. receive approval in writing from the Director of the Office of Energy Projects (Director of OEP) **before using that modification**.

2. The Director of OEP has delegated authority to take all steps necessary to ensure the protection of life, health, property and the environment during construction and operation of the project. This authority shall include:

    a. the modification of conditions of this Order; and
    b. the design and implementation of any additional measures deemed necessary (including stop-work authority) to assure continued compliance with the intent of the conditions of this Order.

3. **Prior to any construction**, Entrega shall file an affirmative statement with the Secretary, certified by a senior company official, that all company personnel, environmental inspectors (EIs), and contractor personnel will be informed of the EI's authority and have been or will be trained on the implementation of the environmental mitigation measures appropriate to their jobs **before** becoming involved with construction and restoration activities.

4. The authorized facility locations shall be as shown in the EIS, as supplemented by filed alignment sheets. **As soon as they are available, and before the start of construction**, Entrega shall file with the Secretary any revised detailed survey alignment maps/sheets at a scale not smaller than 1:6,000 with station positions for all facilities approved by this Order. All requests for modifications of environmental conditions of this Order or site-specific clearances must be written and must reference locations designated on these alignment maps/sheets.

    Entrega's exercise of eminent domain authority granted under Natural Gas Act (NGA) Section 7(h) in any condemnation proceedings related to the Order must be consistent with these authorized facilities and locations. Entrega's right of eminent domain granted under NGA Section 7(h) does not authorize it

to increase the size of its natural gas pipeline to accommodate future needs or to acquire a right-of-way (ROW) for a pipeline to transport a commodity other than natural gas.

5. Entrega shall file with the Secretary detailed alignment maps/sheets and aerial photographs at a scale not smaller than 1:6,000 identifying all route realignments or facility relocations, and staging areas, pipe storage yards, new access roads, and other areas that would be used or disturbed and have not been previously identified in filings with the Secretary. Approval for each of these areas must be explicitly requested in writing. For each area, the request must include a description of the existing land use/cover type, documentation of landowner approval, whether any cultural resources or federally listed threatened or endangered species would be affected, and whether any other environmentally sensitive areas are within or abutting the area. All areas shall be clearly identified on the maps/sheets/aerial photographs. Each area must be approved in writing by the Director of OEP **before construction in or near that area**.

   This requirement does not apply to route variations required herein, additional areas allowed by Entrega's *Upland Erosion Control, Revegetation, and Maintenance Plan*, or minor field realignments per landowner needs and requirements that do not affect other landowners or sensitive environmental areas such as wetlands.

   Examples of alterations requiring approval include all route realignments and facility location changes resulting from:

   a. implementation of cultural resources mitigation measures;
   b. implementation of endangered, threatened, or special concern species mitigation measures;
   c. recommendations by state regulatory authorities; and
   d. agreements with individual landowners that affect other landowners or could affect sensitive environmental areas.

6. **Within 60 days of the acceptance of this Certificate and before construction** begins, Entrega shall file an initial Implementation Plan with the Secretary for the review and written approval of the Director of OEP describing how Entrega will implement the mitigation measures required by this Order. Entrega must file revisions to the plan as schedules change. The plan shall identify:

   a. how Entrega will incorporate these requirements into the contract bid documents, construction contracts (especially penalty clauses and specifications), and construction drawings so that the mitigation required at each site is clear to onsite construction and inspection personnel;
   b. the number of EIs assigned per spread and a description of how Entrega will ensure that sufficient personnel are available to implement the environmental mitigation;
   c. company personnel, including EIs and contractors, who will receive copies of the appropriate material;
   d. the training and instructions Entrega will give to all personnel involved with construction and restoration (initial and refresher training as the project progresses and personnel change), with the opportunity for OEP staff to participate in the training session(s);

e. the company personnel (if known) and specific portion of Entrega's organization having responsibility for compliance;
f. the procedures (including use of contract penalties) Entrega will follow if noncompliance occurs; and
g. for each discrete facility, a Gantt or PERT chart (or similar project scheduling diagram), and dates for:

    i. the completion of all required surveys and reports;
    ii. the mitigation training of onsite personnel;
    iii. the start of construction; and
    iv. the start and completion of restoration.

7. Entrega shall employ a team of EIs (i.e., three or more) per construction spread. The EIs shall be:

    a. responsible for monitoring and ensuring compliance with all mitigation measures required by this Order and other grants, permits, certificates, or other authorizing documents;
    b. responsible for evaluating the construction contractor's implementation of the environmental mitigation measures required in the contract and any other authorizing document;
    c. empowered to order correction of acts that violate the environmental conditions of this Order, and any other authorizing document;
    d. a full-time position, separate from all other activity inspectors;
    e. responsible for documenting compliance with the environmental conditions of this Order, as well as any environmental conditions/permit requirements imposed by other federal, state, or local agencies; and
    f. responsible for maintaining status reports.

8. Entrega shall file updated status reports prepared by the head EI with the Secretary on a weekly basis **until all construction-related activities, including restoration activities, are complete**. On request, these status reports will also be provided to other federal and state agencies with permitting responsibilities. Status reports shall include:

    a. the current construction status of each spread, work planned for the following reporting period, and any schedule changes for stream crossings or work in other environmentally sensitive areas;
    b. a listing of all problems encountered and each instance of noncompliance observed by the EIs during the reporting period (both for the conditions imposed by the Commission and any environmental conditions/permit requirements imposed by other federal, state, or local agencies);
    c. a description of corrective actions implemented in response to all instances of noncompliance, and their cost;
    d. the effectiveness of all corrective actions implemented;
    e. a description of any landowner/resident complaints that may relate to compliance with the requirements of the Commission Order, and the measures taken to satisfy their concerns; and
    f. copies of any correspondence received by Entrega from other federal, state, or local permitting agencies concerning instances of noncompliance, and Entrega's response.

9. Entrega must receive written authorization from the Director of OEP **before commencing service** from the project. Such authorization will only be granted following a determination that rehabilitation/restoration of the ROW and other areas of project-related disturbance are proceeding satisfactorily.

10. **Within 30 days of placing the certificated facilities in service**, Entrega shall file an affirmative statement with the Secretary, certified by a senior company official:

    a. that the facilities have been constructed in compliance with all applicable conditions, and that continuing activities will be consistent with all applicable conditions; or
    b. identifying which of the Certificate conditions Entrega has complied with or will comply with. This statement shall also identify any areas affected by the project where compliance measures were not properly implemented, if not previously identified in filed status reports, and the reason for noncompliance.

11. Entrega shall include the White River in its assessment of potential streambed scour depths, so that this information will be available for design purposes if an open-cut crossing is ultimately required at this location.

12. **Prior to construction**, Entrega shall confirm that the location of all aboveground facilities at the Meeker Hub Compressor Station would be outside of the 100-year floodplain. If any aboveground facility would be located within the 100-year floodplain, Entrega should identify what design measures, site modifications, or other protection measures it would adopt to ensure the safety of the facility from flood and debris flow events.

13. During construction in areas prone to wind erosion, Entrega shall "wet down" topsoil stockpiles to maintain a surface crust which would act to minimize wind-blown losses.

14. If severe wind erosion occurs (as noted by exposed pipe, deflation, or dune formation), Entrega shall install and monitor erosion prevention devices (e.g., snow fences) to ensure soil stabilization as part of its ongoing maintenance program.

15. Entrega's EIs shall monitor for potential topsoil degradation in areas where it is not stripped from the working side of the construction ROW. If topsoil in these areas becomes powdered or pulverized to a depth of 4 inches and is being mixed with subsoil, or if wind is moving topsoil off the ROW regardless of dust control measures applied, then the EIs, in conjunction with the agencies' compliance monitors, shall require that Entrega change its procedures to strip topsoil from both the ditch line and the working side of the ROW.

16. **Prior to construction**, Entrega shall revise its Weed Management Plan to include:

    a. the results of a survey which identifies by milepost (MP) where noxious or invasive weeds are currently present either within or immediately adjacent to all areas of project-related disturbance;
    b. a site-specific plan for each location where weeds are present which:

i. describes options for pretreatment (including the month(s) of the year when pretreatment would be effective);
ii. identifies who was consulted regarding possible pretreatment options; and
iii. includes whether the landowner/administrator has approved of the pretreatment; and

c. the location of all equipment wash stations (by MP), the source(s) of the wash water, how effluent from the wash stations would be monitored/treated to prevent seed releases, and specific plans for station decommissioning. Entrega shall also include a scaled plot plan of a typical wash station in the Weed Management Plan, identifying all features. Wash stations shall be at least 0.25 mile from all perennial streams and monitored for weeds after construction as part of the ROW monitoring and reclamation efforts.

17. Entrega shall control noxious weeds along the pipeline ROW for the life of the project. Measures for long-term weed control strategies should be developed through consultations with the local Natural Resources Conservation Service, weed control board or officials, land management agencies, and landowners. Entrega's developed methods and comments from the various agencies should be filed with the Secretary for the review and written approval of the Director of OEP before implementation.

18. Entrega shall develop and implement an environmental complaint resolution procedure that remains active for at least 3 years following the completion of construction. The procedure shall provide landowners with clear and simple directions for identifying and resolving their environmental mitigation problems/concerns during construction of the project and restoration of the ROW. **Prior to construction**, Entrega shall mail the complaint resolution procedure to each landowner whose property would be crossed by the project.

a. In its letter to affected landowners, Entrega shall:

i. provide a local contact and telephone number that the landowners should call first with their concerns; the letter should indicate how soon a landowner should expect a response;
ii. instruct the landowner that, if they are not satisfied with the response, they should call the Entrega Hotline; the letter should indicate how soon to expect a response; and
iii. instruct the landowners that, if they were still not satisfied with the response from Entrega's Hotline, they should contact the Commission's Enforcement Hotline at (888) 889-8030 or at hotline@ferc.gov.

b. In addition, Entrega shall include a table in its status report containing the following information for each problem/concern:

i. the identity of the caller and the date of the call;
ii. the identification number from the certificated alignment sheet(s) of the affected property and approximate location by MP;
iii. a description of the concern/problem; and

iv. an explanation of how and when the problem was resolved, will be resolved, or why it has not been resolved.

19. To minimize impact on water supply wells and systems, Entrega shall:

a. **prior to construction**, file with the Secretary the location by MP of all water supply wells or water supply systems within 200 feet of all construction work areas. For each, the filing should identify the type of well (domestic, municipal, industrial, agricultural, etc.);
b. **prior to any blasting activities**, obtain landowner permission to use an independent contractor to inspect any aboveground structures and water supply wells within 200 feet of construction areas subject to blasting;
c. **during blasting activities**, monitor ground vibrations at the nearest structure or water supply well within 200 feet of construction areas subject to blasting. If water supply wells/systems are damaged during construction, provide an alternative source of potable water until the well or system is repaired/replaced or the landowner is fairly compensated for the damage; and
d. file a report with the Secretary **within 30 days of placing the pipeline facilities in service** identifying all water supply wells/systems damaged by construction, and how they were repaired, including a discussion of any complaints concerning the well yield or water quality and how each problem was resolved.

20. On federal lands, Entrega shall restrict refueling, lubricating, and hazardous material storage to at least 500 feet away from the edge of any stream, wetland, ditch, or other waterbody, unless written approval from the Bureau of Land Management (BLM) is received.

21. Entrega shall file with the Secretary, **within the comment period for the draft EIS**, revised Site-Specific Waterbody Crossing Plans for each horizontal directionally drilled (HDD) crossing which clearly indicate:

a. the location of the pipe stringing area for pullback;
b. the dimensions for the entry and exit holes and areas used for spoil and drilling mud storage;
c. the volume and source of water needed for drilling;
d. whether drilling mud would be stored in excavated and lined pits or in portable tanks; and
e. where drilling mud and cuttings would be disposed.

Each plan for an HDD crossing should be accompanied by a scaled diagram (scale not smaller than 1:2,400) showing the location and dimension of all temporary workspaces, the arrangement of equipment on the site, and all environmental controls. Each revised plan should clearly justify the size and extent of all temporary workspaces associated with the waterbody crossing.

22. Entrega shall file with the Secretary, **within the comment period for the draft EIS**, an explanation for the decision to place the drill entry site and a large extra workspace on the north side of the White River, and a description of the measures it would take to protect wet areas on the south side of the river during HDD activities.

23. Entrega shall file with the Secretary, **within the comment period for the draft EIS**, revised Site-Specific Waterbody Crossing Plans that clearly indicate the location and justification for any extra workspace that would be located less than 50 feet from the water's edge.

24. Entrega shall continue to consult with the water supply operators and the appropriate federal and state agencies regarding potential impacts on water supplies and the need for specific mitigation measures during pipeline construction.

25. Entrega shall use a commercial hybrid (sterile) cover crop for temporary stabilization and reclaim wetlands with native species. Additionally, Entrega shall file with the Secretary its project-specific Wetland Restoration Plan, indicating by MP how wetlands disturbed by project activities would be restored to pre-construction conditions, for review and written approval by the Director of OEP **prior to commencing service**. Entrega shall include the comments of the land management and state agencies with whom it consulted during plan development.

26. To facilitate the restoration of riparian woodlands disturbed by project construction, Entrega shall:

    a. conduct pre-construction surveys in woody riparian areas to determine the existing vegetation community composition and density. Based on the results of these surveys, Entrega shall reseed and replant with these existing tree and shrub species at pre-construction densities, accounting for intact root masses; and
    b. file site-specific plans for each of the six riparian woodland crossings with the Secretary for review and written approval by the Director of OEP **prior to construction**. In developing these plans, Entrega shall locate temporary workspace areas to avoid riparian woodland to the maximum extent practicable. Entrega must provide detailed justification for any temporary workspace area that is not sited to avoid disturbance of riparian woodland. At a minimum, each plan shall include:

        i. an inventory of the area of disturbance, based on the preconstruction survey;
        ii. site-specific measures to avoid or reduce the extent of riparian woodland disturbance;
        iii. site-specific measures to restore all riparian woodland disturbance to near-preconstruction conditions;
        iv. an aerial-photo based plot plan showing all areas of disturbance, environmental controls, and restoration measures (scale 1:1,200); and
        v. specific criteria for assessing restoration success.

27. Entrega's Els shall, as needed and in conjunction with the agencies' compliance monitors, modify/reduce the spacing of ditch-plug bridges/escape ramps and breaks in the strung and welded pipe at specific locations where the proposed spacing is found to be insufficient, to facilitate wildlife crossover/escape from the ditch.

28. To minimize the impacts on big game species during winter, Entrega shall:

    a. avoid Wildlife Habitat Management Area lands during non-emergency maintenance activities from November 15 through April 30; and

b. in addition to the winter constraint period, avoid construction in the Colorado Division of Wildlife's Bitter Brush State Wildlife Area from October 1 through December 31 to avoid heavy hunter concentration areas.

29. Entrega shall coordinate with the BLM to obtain applicable historic raptor nest locations, **prior to conducting 2005 raptor surveys**.

30. Entrega shall conduct preconstruction field surveys for federally listed plant species (i.e., the Colorado butterfly plant, Dudley Bluffs bladderpod, blowout penstemon, Dudley Bluffs twinpod, and Ute ladies'-tresses) in areas subject to project-related disturbance in accordance with its Special Status Species Survey Plan. **Prior to construction**, Entrega shall file the following information with the Secretary:

    a. name(s) and qualifications of the person(s) conducting the survey;
    b. method(s) used to conduct the survey;
    c. date(s) of the survey;
    d. area surveyed (include the MPs surveyed); and
    e. results of the surveys, to indicate species presence or absence.

31. If a federally listed plant species is found during the preconstruction surveys, Entrega must notify the Commission staff and the U.S. Fish and Wildlife Service (FWS) before commencing any project construction activity. This notification shall contain Entrega's evaluation of whether or not the plant(s) could be avoided by reroute or by the use of a horizontal bore. Further, Entrega **shall not begin construction activities until**:

    a. the staff receives comments from the FWS regarding the proposed action;
    b. the staff completes formal consultation with the FWS, if required; and
    c. Entrega has received written notification from the Director of OEP that construction or use of mitigation may begin.

32. Entrega **shall not begin construction activities until**:

    a. Entrega files with the Secretary for review and written approval by the Director of OEP its evaluation of possible ROW re-alignments to avoid Preble's meadow jumping mouse habitat;
    b. the staff receives the Preble's meadow jumping mouse survey report as well as comments from the FWS on the survey report and the proposed action's effects on the Preble's meadow jumping mouse;
    c. the staff completes formal consultation with the FWS, if required; and
    d. Entrega has received written notification from the Director of OEP that construction or use of mitigation may begin.

33. If Entrega encounters a previously unidentified active bald eagle nest within 1 mile of the construction ROW, Entrega shall concurrently notify the Commission staff and the FWS, and file such information with the Secretary. Entrega shall not continue with construction until the staff has reviewed the

information, completed any necessary consultation with the FWS, and the Director of OEP notifies Entrega in writing that construction may proceed or use of mitigation may begin.

34. In order to minimize impacts on roosting bald eagles, Entrega shall conduct surveys for roosting eagles within potential winter roost areas if construction occurs between November 15 and April 15. In the event that occupied bald eagle winter roost sites are identified within 0.5 mile of construction areas, Entrega shall coordinate with the FWS to determine if protection measures (e.g., timing restrictions and/or buffer areas) would be required. Entrega shall report the results of the coordination in a filing with the Secretary, and shall not begin construction until the staff has reviewed the information, completed any necessary consultations with the FWS, and the Director of OEP notifies Entrega in writing that construction or use of mitigation may begin.

35. Entrega shall identify all potential bald eagle roosting trees on or immediately adjacent to the ROW and assess measures to avoid any trees that could be damaged by construction. Any potential bald eagle roosting tree that Entrega believes could not be avoided shall be identified to the staff with a justification as to why the tree must be removed and what measures Entrega considered before determining that removal was necessary. This information shall be filed with the Secretary for the review and written approval of the Director of the OEP before construction or use of mitigation may begin.

36. If low-intensity preconstruction (e.g., surveying and staking) work is necessary within 2 miles of known sage grouse leks between March 1 and June 30, activities shall occur only between 9:00 a.m. and 4:00 p.m.

37. Entrega shall coordinate with the FWS on the timing of water withdrawal from the Colorado River drainage in order to avoid or minimize potential impact on Colorado River endangered fish species. Following this coordination and **prior to hydrostatic test water withdrawal**, Entrega shall file a revised hydrostatic test plan with the Secretary for review and written approval by the Director of OEP.

38. In the event that Entrega can not complete an HDD crossing of the White or Yampa Rivers, Entrega shall not begin a non-HDD crossing until the staff completes any necessary Section 7 consultation with the FWS, and the Director of OEP notifies Entrega in writing that it may proceed with an alternate river crossing method.

39. Entrega shall revise its Site-Specific Waterbody Crossing Plan for the North Platte River to include specific measures to avoid or minimize impacts on recreational boat users. If an open-cut crossing is ultimately necessary at the White or Yampa Rivers, Entrega shall similarly revise the site-specific crossing plans for these locations. All revised site-specific waterbody crossing plans shall be filed with the Secretary for review and written approval by the Director of OEP **prior to construction**.

40. Entrega shall defer construction and use of facilities and staging, storage, and temporary work areas and new or to-be-improved access roads **until**:

a. Entrega files with the Secretary all remaining cultural resource inventory and evaluation reports, and necessary avoidance or treatment plans;
b. Entrega files with the Secretary the BLM's and the Colorado and Wyoming State Historic Preservation Offices' comments, as applicable, on all reports and plans; and
c. the Director of OEP reviews and approves all reports and plans and notifies Entrega in writing that it may proceed.

All material filed with the Commission containing **location, character, and ownership** information about cultural resources must have the cover and any relevant pages therein clearly labeled in bold lettering: **"CONTAINS PRIVILEGED INFORMATION – DO NOT RELEASE."**

41. Entrega shall file with the Secretary far-field sound data (from either the manufacturer or a similar unit in service elsewhere) for the authorized compressors, manufacturer's specifications and attenuation data for the intake and exhaust silencers finally selected, a description and diagram of the final design of the compressor building, and a revised acoustical analysis reflecting the actual noise control equipment, for review and written approval of the Director of OEP, **before commencing construction of the Meeker Hub Compressor Station**.

42. Entrega shall file a noise survey with the Secretary **no later than 60 days** after placing the authorized unit(s) at the Meeker Hub, Bighole and Wamsutter Compressor Stations in service. If the noise attributable to the operation of the compressor stations at full load exceeds an L_{dn} of 55 dBA at any nearby noise-sensitive area, Entrega shall install additional noise controls to meet that level **within 1 year** of the in-service date. Entrega shall confirm compliance with the L_{dn} of 55 dBA requirement by filing a second noise survey with the Secretary **no later than 60 days** after Entrega installs the additional noise controls.

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APPENDICES

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ENTREGA'S UPLAND EROSION CONTROL, REVEGETATION, AND MAINTENANCE PLAN

ENTREGA'S UPLAND EROSION CONTROL, REVEGETATION, AND MAINTENANCE PLAN

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ENTREGA'S UPLAND EROSION CONTROL, REVEGETATION, AND MAINTENANCE PLAN (PLAN)

I. APPLICABILITY

A. The intent of this Plan is to assist Entrega Gas Pipeline Inc. (Entrega) by identifying baseline mitigation measures for minimizing erosion and enhancing revegetation. Entrega will specify in its applications for a FERC Certificate (Certificate) any individual measures in this Plan it considers unnecessary, technically infeasible, or unsuitable due to local conditions and to fully describe any alternative measures they would use. Entrega will also explain how those alternative measures would achieve a comparable level of mitigation.

Once the Entrega Gas Pipeline project is certificated, changes to this Plan may be approved. Any such changes from the measures in this Plan may be approved by the Director of the Office of Energy Projects (Director), upon Entrega's written request, if the Director agrees that an alternative measure:

1. provides equal or better environmental protection;

2. is necessary because a portion of this Plan is infeasible or unworkable based on project-specific conditions; or

3. is specifically required in writing by another Federal, state, or Native American land management agency for the portion of the project on its land or under its jurisdiction.

Any requirements in this Plan to file material with the Secretary of the FERC (Secretary) do not apply to projects undertaken under the provisions of the blanket certificate program. This exemption does not apply to a request for alternative measures.

Project-related impacts on wetland and waterbody systems are addressed in Entrega's Wetland and Waterbody Construction and Mitigation Procedures (Procedures).

II. SUPERVISION AND INSPECTION

A. ENVIRONMENTAL INSPECTION

1. At least one Environmental Inspector is required for each construction spread during construction and restoration (as defined by section V). The number and experience of Environmental Inspectors assigned to each construction spread should be appropriate for the length of the construction spread and the number/significance of resources affected.

2. Environmental Inspectors shall have peer status with all other activity inspectors.

3. Environmental Inspectors shall have the authority to stop activities that violate the environmental conditions of the Certificate, state and Federal environmental permit conditions, or landowner requirements; and to order appropriate corrective action.

B. RESPONSIBILITIES OF ENVIRONMENTAL INSPECTORS

At a minimum, the Environmental Inspector(s) shall be responsible for:

1. Ensuring compliance with the requirements of this Plan, the Procedures, the environmental conditions of the Certificate authorization, the mitigation measures proposed by the applicant (as approved and/or modified by the Certificate), other environmental permits and approvals, and environmental requirements in landowner easement agreements;

2. Identifying, documenting, and overseeing corrective actions, as necessary to bring an activity back into compliance;

3. Verifying that the limits of authorized construction work areas and locations of access roads are properly marked before clearing;

4. Verifying the location of signs and highly visible flagging marking the boundaries of sensitive resource areas, waterbodies, wetlands, or areas with special requirements along the construction work area;

5. Identifying erosion/sediment control and soil stabilization needs in all areas;

6. Ensuring that the location of dewatering structures and slope breakers will not direct water into known cultural resources sites or locations of sensitive species;

7. Verifying that trench dewatering activities do not result in the deposition of sand, silt, and/or sediment near the point of discharge into a wetland or waterbody. If such deposition is occurring, the dewatering activity shall be stopped and the design of the discharge shall be changed to prevent reoccurrence;

8. Ensuring that subsoil and topsoil are tested in agricultural and residential areas to measure compaction and determine the need for corrective action;

9. Advising the Chief Construction Inspector when conditions (such as wet weather) make it advisable to restrict construction activities to avoid excessive rutting;

10. Ensuring restoration of contours and topsoil;

11. Verifying that the soils imported for agricultural or residential use have been certified as free of noxious weeds and soil pests, unless otherwise approved by the landowner;

12. Determining the need for and ensuring that erosion controls are properly installed, as necessary to prevent sediment flow into wetlands, waterbodies, sensitive areas, and onto roads;

13. Inspecting and ensuring the maintenance of temporary erosion control measures at least:

    a. on a daily basis in areas of active construction or equipment operation;

    b. on a weekly basis in areas with no construction or equipment operation; and

    c. within 24 hours of each 0.5 inch of rainfall;

14. Ensuring the repair of all ineffective temporary erosion control measures within 24 hours of identification;

15. Keeping records of compliance with the environmental conditions of the FERC certificate, and the mitigation measures proposed by Entrega in the application submitted to the FERC, and other Federal or state environmental permits during active construction and restoration; and

16. Identifying areas that should be given special attention to ensure stabilization and restoration after the construction phase.

III. PRECONSTRUCTION PLANNING

Entrega shall do the following before construction:

A. CONSTRUCTION WORK AREAS

1. Identify all construction work areas (*e.g.*, construction right-of-way, extra work space areas, pipe storage and contractor yards, borrow and disposal areas, access roads, etc.) that would be needed for safe construction. Entrega must ensure that appropriate cultural resources and biological surveys have been conducted.

2. Project sponsors are encouraged to consider expanding any required cultural resources and endangered species surveys in anticipation of the need for activities outside of certificated work areas.

B. DRAIN TILE AND IRRIGATION SYSTEMS

1. Attempt to locate existing drain tiles and irrigation systems.

2. Contact landowners and local soil conservation authorities to determine the locations of future drain tiles that are likely to be installed within 3 years of the authorized construction.

3. Develop procedures for constructing through draintiled areas, maintaining irrigation systems during construction, and repairing drain tiles and irrigation systems after construction.

4. Engage qualified drain tile specialists, as needed to conduct or monitor repairs to drain tile systems affected by construction. Use drain tile specialists from the project area, if available.

C. GRAZING DEFERMENT

Develop grazing deferment plans with willing landowners, grazing permittees, and land management agencies to minimize grazing disturbance of revegetation efforts.

D. ROAD CROSSINGS AND ACCESS POINTS

Plan for safe and accessible conditions at all roadway crossings and access points during construction and restoration.

E. DISPOSAL PLANNING

Determine methods and locations for the disposal of construction debris (*e.g.*, timber, slash, mats, garbage, drilling fluids, excess rock, etc). Off-site disposal in other than commercially operated disposal locations is subject to compliance with all applicable survey, landowner permission, and mitigation requirements.

F. AGENCY COORDINATION

Entrega must coordinate with the appropriate local, state, and Federal agencies as outlined in this Plan and in the Certificate.

1. Obtain written recommendations from the local soil conservation authorities or land management agencies regarding permanent erosion control and revegetation specifications.

2. Develop specific procedures in coordination with the appropriate agency to prevent the introduction or spread of noxious weeds and soil pests resulting from construction and restoration activities.

G. STORMWATER POLLUTION PREVENTION PLAN

Make available on each construction spread the Stormwater Pollution Prevention Plan prepared for compliance with the U.S. Environmental Protection Agency's National Stormwater Program General Permit requirements.

IV. INSTALLATION

A. APPROVED AREAS OF DISTURBANCE

1. Project-related ground disturbance shall be limited to the construction right-of-way, extra work space areas, pipe storage yards, borrow and disposal areas, access roads, and other areas approved in the Certificate. Any project-related ground disturbing activities outside these Certificated areas, except those needed to comply with the Plan and Procedures (*e.g.*, slope breakers, energy-dissipating devices, dewatering structures, drain tile system repairs) will require prior Director approval. All construction or restoration activities outside of the Certificated areas are subject to all applicable survey and mitigation requirements.

2. The construction right-of-way width for a project shall not exceed 75 feet or that described in the FERC application unless otherwise modified by a Certificate condition. However, in limited, non-wetland areas, this construction right-of-way width may be expanded by up to 25 feet without Director approval to accommodate full construction right-of-way topsoil segregation and to ensure safe construction where topographic conditions (such as side-slopes) or soil limitations require it. Twenty-five feet of extra construction right-of-way width may also be used in limited, non-wetland or non-forested areas for truck turn-arounds where no reasonable alternative access exists.

Project use of these additional limited areas is subject to landowner approval and compliance with all applicable survey and mitigation requirements. When such additional areas are used, each one should be identified and the need explained in the weekly or biweekly construction reports to the FERC, if required. The following material should be included in the reports:

a. the location of each additional area by station number and reference to a previously filed alignment sheet, or updated alignment sheets showing the additional areas;

b. identification of where the Commission's records contain evidence that the additional areas were previously surveyed; and

c. a statement that landowner approval has been obtained and is available in project files.

Prior written approval of the Director is required when the Certificated construction right-of-way width would be expanded by more than 25 feet.

B. TOPSOIL SEGREGATION

1. Unless the landowner or land management agency specifically approves otherwise, prevent the mixing of topsoil with subsoil by stripping topsoil from either the full work area or from the trench and subsoil storage area (ditch plus spoil side method) in:

   a. actively cultivated or rotated croplands and pastures;

   b. residential areas;

   c. hayfields; and

   d. other areas at the landowner's or land managing agency's request.

2. On land managed by the Bureau of Land Management and Colorado and Wyoming state lands, and on private lands where the landowner has not made a specific request, strip the topsoil from the ditch line only.

3. In residential areas importation of topsoil is an acceptable alternative to topsoil segregation.

4. In deep soils (more than 12 inches of topsoil), segregate at least 12 inches of topsoil. In soils with less than 12 inches of topsoil make every effort to segregate the entire topsoil layer.

5. Where topsoil segregation is required, maintain separation of salvaged topsoil and subsoil throughout all construction activities. Separation of topsoil may be maintained by a physical barrier, such as weed-free straw or hay, in areas where restricted right-of-way exists.

6. Segregated topsoil may not be used for padding the pipe.

C. DRAIN TILES

1. Mark locations of drain tiles damaged during construction.

2. Probe all drainage tile systems within the area of disturbance to check for damage.

3. Repair damaged drain tiles to their original or better condition. Do not use filter-covered drain tiles unless the local soil conservation authorities and the landowner agree. Use qualified specialists for testing and repairs.

4. For new pipelines in areas where drain tiles exist or are planned, ensure that the depth of cover over the pipeline is sufficient to avoid interference with drain tile systems. For adjacent pipeline loops in agricultural areas, install the new pipeline with at least the same depth of cover as the existing pipeline(s).

D. IRRIGATION

Maintain water flow in crop irrigation systems, unless shutoff is coordinated with affected parties.

E. ROAD CROSSINGS AND ACCESS POINTS

1. Maintain safe and accessible conditions at all road crossings and access points during construction.

2. If crushed stone access pads are used in residential or active agricultural areas, place the stone on synthetic fabric to facilitate removal.

F. TEMPORARY EROSION CONTROL

Install temporary erosion controls immediately after initial disturbance of the soil. Temporary erosion controls must be properly maintained throughout construction (on a daily basis) and reinstalled as necessary (such as after backfilling of the trench) until replaced by permanent erosion controls or restoration is complete.

1. Temporary Slope Breakers

a. Temporary slope breakers are intended to reduce runoff velocity and divert water off the construction right-of-way. Temporary slope breakers may be constructed of materials such as soil, silt fence, staked hay or straw bales, or sand bags.

b. Install temporary slope breakers on all disturbed areas, as necessary to avoid excessive erosion. Temporary slope breakers must be installed on slopes greater than 5 percent where the base of the slope is less than 50 feet from waterbody, wetland and road crossings at the following spacing (closer spacing should be used if necessary):

Slope (%)	Spacing (feet)
5 - 15	300
>15 – 30	200
>30	100

c. Direct the outfall of each temporary slope breaker to a stable, well vegetated area or construct an energy-dissipating device at the end of the slope breaker and off the construction right-of-way.

d. Position the outfall of each temporary slope breaker to prevent sediment discharge into wetlands, waterbodies, or other sensitive resources.

2. Sediment Barriers

a. Sediment barriers are intended to stop the flow of sediments and to prevent the deposition of sediments into sensitive resources. They may be constructed of materials such as silt fence, staked hay or straw bales, compacted earth (*e.g.*, driveable berms across travelways), sand bags, or other appropriate materials.

b. At a minimum, install and maintain temporary sediment barriers across the entire construction right-of-way at the base of slopes greater than 5 percent where the base of the slope is less than 50 feet from a waterbody, wetlands or road crossing

until revegetation is successful as defined in this Plan. Leave adequate room between the base of the slope and the sediment barrier to accommodate ponding of water and sediment deposition.

c. Where wetlands or waterbodies are adjacent to and downslope of construction work areas, install sediment barriers along the edge of these areas, as necessary to prevent sediment flow into the wetland or waterbody.

3. Mulch

a. Apply mulch on dry, sandy sites and slopes exceeding 10 percent (except in actively cultivated cropland and in areas where surface rock greater than 4 inches in diameter exceeds at least 20 percent surface coverage after rough grading), unless otherwise stated by the landowner or land-managing agency, concurrent with or immediately after seeding, where necessary to stabilize the soil surface and to reduce wind and water erosion. Spread mulch uniformly over the area to cover at least 75 percent of the ground surface at a rate of 2 tons/acre of straw or its equivalent, unless the local soil conservation authority, landowner, or land managing agency approves otherwise in writing.

b. Mulch can consist of weed-free straw or hay, wood fiber hydromulch, erosion control fabric, or some functional equivalent.

c. Mulch <u>before</u> seeding if:

(1) final grading and installation of permanent erosion control measures will not be completed in an area within 20 days after the trench in that area is backfilled (10 days in residential areas), as required in section V.A.1; or

(2) construction or restoration activity is interrupted for extended periods, such as when seeding cannot be completed due to seeding period restrictions.

d. If mulching before seeding, increase mulch application on all slopes within 100 feet of waterbodies and wetlands to a rate of 3 tons/acre of straw or equivalent.

e. If wood chips are used as mulch, do not use more than 1 ton/acre and add the equivalent of 11 lbs/acre available nitrogen (at least 50 percent of which is slow release).

f. Ensure that mulch is adequately anchored to minimize loss due to wind and water.

g. When anchoring with liquid mulch binders, use rates recommended by the manufacturer. Do not use liquid mulch binders within 100 feet of wetlands or waterbodies.

h. Install erosion control fabric on waterbody banks at the time of final bank recontouring. Anchor the erosion control fabric with staples or other appropriate devices.

V. RESTORATION

A. CLEANUP

1. Commence cleanup operations immediately following backfill operations. Complete final grading, topsoil replacement, and installation of permanent erosion control structures within 20 days after backfilling the trench (10 days in residential areas). If seasonal or other weather conditions prevent compliance with these time frames, maintain temporary erosion controls (temporary slope breakers and sediment barriers) until conditions allow completion of cleanup.

   Entrega should file with the Secretary for the review and written approval of the Director, a winterization plan if construction will continue into the winter season when conditions could delay successful decompaction, topsoil replacement, or seeding until the following spring.

2. A travel lane may be left open temporarily to allow access by construction traffic if the temporary erosion control structures are installed as specified in section IV.F. and inspected and maintained (as specified in sections II.B.12 through 14). When access is no

longer required, the travel lane must be removed and the right-of-way restored.

3. Rock excavated from the trench may be used to backfill the trench only to the top of the existing bedrock profile. Rock that is not returned to the trench should be considered construction debris, unless approved for use as mulch or for some other use on the construction work areas by the landowner or land managing agency.

4. Remove excess rock from at least the top 12 inches of soil in all actively cultivated or rotated cropland and pastures, hayfields, and residential areas, as well as other areas at the landowner's request. The size, density, and distribution of rock on the construction work area should be similar to adjacent areas not disturbed by construction. The landowner may approve other provisions in writing.

5. Grade the construction right-of-way to restore pre-construction contours and leave the soil in the proper condition for planting.

6. Remove construction debris from all construction work areas unless the landowner or land managing agency approves otherwise.

7. Remove temporary sediment barriers when replaced by permanent erosion control measures or when revegetation is successful.

B. PERMANENT EROSION CONTROL DEVICES

1. Trench Breakers

a. Trench breakers are intended to slow the flow of subsurface water along the trench. Trench breakers may be constructed of materials such as sand bags or polyurethane foam. Do not use topsoil in trench breakers.

b. An engineer or similarly qualified professional shall determine the need for and spacing of trench breakers. Otherwise, trench breakers shall be installed at the same spacing as and upslope of permanent slope breakers.

c. In agricultural fields and residential areas where slope breakers are not typically required, install trench breakers at

the same spacing as if permanent slope breakers were required.

d. At a minimum, install a trench breaker at the base of slopes greater than 5 percent where the base of the slope is less than 50 feet from a waterbody or wetland and where needed to avoid draining a waterbody or wetland.

2. Permanent Slope Breakers

a. Permanent slope breakers are intended to reduce runoff velocity, divert water off the construction right-of-way, and prevent sediment deposition into sensitive resources. Permanent slope breakers may be constructed of materials such as soil, sand bags, or some functional equivalent.

b. Construct and maintain permanent slope breakers in all areas, except cultivated areas and lawns, using spacing recommendations obtained from the local soil conservation authority or land managing agency.

In the absence of written recommendations, use the following spacing unless closer spacing is necessary to avoid excessive erosion on the construction right-of-way:

Slope (%)	Spacing (feet)
5 - 15	300
>15 - 30	200
>30	100

c. Construct slope breakers to divert surface flow to a stable area without causing water to pool or erode behind the breaker. In the absence of a stable area, construct appropriate energy-dissipating devices at the end of the breaker.

d. Slope breakers may extend slightly (about 4 feet) beyond the edge of the construction right-of-way to effectively drain water off the disturbed area. Where slope breakers extend beyond the edge of the construction right-of-way, they are subject to compliance with all applicable survey requirements.

C. SOIL COMPACTION MITIGATION

1. Test topsoil and subsoil for compaction at regular intervals in agricultural and residential areas disturbed by construction activities. Conduct tests on the same soil type under similar moisture conditions in undisturbed areas to approximate preconstruction conditions. Use penetrometers or other appropriate devices to conduct tests.

2. Plow severely compacted agricultural areas with a paraplow or other deep tillage implement. In areas where topsoil has been segregated, plow the subsoil before replacing the segregated topsoil.

   Alternatively, make arrangements with the landowner to plant and plow under a "green manure" crop, such as alfalfa, to decrease soil bulk density and improve soil structure. If subsequent construction and cleanup activities result in further compaction, conduct additional tilling.

3. Perform appropriate soil compaction mitigation in severely compacted residential areas.

D. REVEGETATION

1. General

   a. Entrega is responsible for ensuring successful revegetation of soils disturbed by project-related activities, except as noted in section V.D.1.b.

   b. Restore all turf, ornamental shrubs, and specialized landscaping in accordance with the landowner's request, or compensate the landowner. Restoration work must be performed by personnel familiar with local horticultural and turf establishment practices.

2. Soil Additives

Fertilize and add soil pH modifiers in accordance with written recommendations obtained from the local soil conservation authority, land management agencies, or landowner. Incorporate recommended soil pH modifier and fertilizer into the top 2 inches of soil as soon as possible after application.

3. Seeding Requirements

a. Prepare a seedbed in disturbed areas to a depth of 3 to 4 inches using appropriate equipment to provide a firm seedbed. When hydroseeding, scarify the seedbed to facilitate lodging and germination of seed.

b. Seed disturbed areas in accordance with written recommendations for seed mixes, rates, and dates obtained from the local soil conservation authority or as requested by the landowner or land management agency. Seeding is not required in actively cultivated croplands unless requested by the landowner.

c. Perform seeding of permanent vegetation within the recommended seeding dates. If seeding cannot be done within those dates, use appropriate temporary erosion control measures discussed in section IV.F. and perform seeding of permanent vegetation at the beginning of the next recommended seeding season. Lawns may be seeded on a schedule established with the landowner.

d. In the absence of written recommendations from the local soil conservation authorities, seed all disturbed soils within 6 working days of final grading, weather and soil conditions permitting, subject to the specifications in section V.D.3.a-c.

e. Base seeding rates on Pure Live Seed. Use seed within 12 months of seed testing.

f. Treat legume seed with an inoculant specific to the species using the manufacturer's recommended rate of inoculant

appropriate for the seeding method (broadcast, drill, or hydro).

g. In the absence of written recommendations from the local soil conservation authorities, landowner, or land managing agency to the contrary, a seed drill equipped with a cultipacker is preferred for seed application.

Broadcast or hydroseeding can be used in lieu of drilling at double the recommended seeding rates. Where seed is broadcast, firm the seedbed with a cultipacker or imprinter after seeding. In rocky soils or where site conditions may limit the effectiveness of this equipment, other alternatives may be appropriate (*e.g.*, use of a chain drag) to lightly cover seed after application, as approved by the Environmental Inspector.

VI. OFF-ROAD VEHICLE CONTROL

To each owner or manager of forested lands offer to install and maintain measures to control unauthorized vehicle access to the right-of-way. These measures may include:

A. Signs;

B. Fences with locking gates;

C. Slash and timber barriers, pipe barriers, or a line of boulders across the right-of-way; and

D. Conifers or other appropriate trees or shrubs across the right-of-way.

VII. POST-CONSTRUCTION ACTIVITIES

A. MONITORING AND MAINTENANCE

1. Conduct follow-up inspections of all disturbed areas after the first and second growing seasons to determine the success of revegetation.

2. Revegetation in non-agricultural areas shall be considered successful if upon visual survey the density and cover of non-nuisance

vegetation are similar in density and cover to adjacent undisturbed lands. In agricultural areas, revegetation shall be considered successful if crop yields are similar to adjacent undisturbed portions of the same field.

Continue revegetation efforts until revegetation is successful.

3. Monitor and correct problems with drainage and irrigation systems resulting from pipeline construction in active agricultural areas until restoration is successful.

4. Restoration shall be considered successful if the right-of-way surface condition is similar to adjacent undisturbed lands, construction debris is removed (unless requested otherwise by the land owner or land managing agency), revegetation is successful, and proper drainage has been restored.

5. Routine vegetation maintenance clearing shall not be done more frequently than every 3 years. However, to facilitate periodic corrosion and leak surveys, a corridor not exceeding 10 feet in width centered on the pipeline may be maintained annually in an herbaceous state. In no case shall routine vegetation maintenance clearing occur between April 15 and August 1 of any year.

6. Efforts to control unauthorized off-road vehicle use, in cooperation with the landowner, shall continue throughout the life of the project. Maintain signs, gates, and vehicle trails as necessary.

B. REPORTING

1. Entrega shall maintain records that identify by milepost:

   a. method of application, application rate, and type of fertilizer, pH modifying agent, seed, and mulch used;

   b. acreage treated;

   c. dates of backfilling and seeding;

   d. names of landowners requesting special seeding treatment and a description of the follow-up actions; and

   e. any problem areas and how they were addressed.

2. Entrega shall file with the Secretary quarterly activity reports documenting problems, including those identified by the landowner, and corrective actions taken for at least 2 years following construction.

APPENDIX B

ENTREGA'S WETLAND AND WATERBODY CONSTRUCTION AND MITIGATION PROCEDURES

ENTREGA'S WETLAND AND WATERBODY CONSTRUCTION AND MITIGATION PROCEDURES

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ENTREGA'S WETLAND AND WATERBODY CONSTRUCTION AND MITIGATION PROCEDURES (PROCEDURES)

I. APPLICABILITY

A. The intent of these Procedures is to assist Entrega Gas Pipeline Inc. (Entrega) by identifying baseline mitigation measures for minimizing the extent and duration of project-related disturbance on wetlands and waterbodies. Entrega will specify in its applications for a FERC Certificate (Certificate) any individual measures in these Procedures it considers unnecessary, technically infeasible, or unsuitable due to local conditions and to fully describe any alternative measures they would use. Entrega will also explain how those alternative measures would achieve a comparable level of mitigation.

Once the Entrega Gas Pipeline project is certificated, further changes may be approved. Any such changes from the measures in these Procedures may be approved by the Director of the Office of Energy Projects (Director), upon Entrega's written request, if the Director agrees that an alternative measure:

1. provides equal or better environmental protection;

2. is necessary because a portion of these Procedures is infeasible or unworkable based on project specific conditions; or

3. is specifically required in writing by another Federal, state, or Native American land management agency for the portion of the project on its land or under its jurisdiction.

Any requirements in these Procedures to file material with the Secretary of the FERC (Secretary) do not apply to projects undertaken under the provisions of the blanket certificate program. This exemption does not apply to a request for alternative measures.

Project-related impacts on non-wetland areas are addressed in Entrega's Upland Erosion Control, Revegetation, and Maintenance Plan (Plan).

B. DEFINITIONS

1. "Waterbody" includes any natural or artificial stream, river, or drainage with perceptible flow at the time of crossing, and other permanent waterbodies such as ponds and lakes:

   a. "minor waterbody" includes all waterbodies less than or equal to 10 feet wide at the water's edge at the time of crossing;

   b. "intermediate waterbody" includes all waterbodies greater than 10 feet wide but less than or equal to 100 feet wide at the water's edge at the time of crossing; and

   c. "major waterbody" includes all waterbodies greater than 100 feet wide at the water's edge at the time of crossing.

2. "Wetland" includes any area that is not in actively cultivated or rotated cropland and that satisfies the requirements of the current Federal methodology for identifying and delineating wetlands.

II. PRECONSTRUCTION FILING

A. The following information shall be filed with the Secretary prior to the beginning of construction:

   1. the hydrostatic testing information specified in section VII.B.3. and a wetland delineation report as described in section VI.A.1., if applicable; and

   2. a schedule identifying when trenching or blasting would occur within each waterbody greater than 10 feet wide, or within any designated coldwater fishery. Entrega shall revise the schedule as necessary to provide FERC staff at least 14 days advance notice. Changes within this last 14-day period must provide for at least 48 hours advance notice.

B. The following site-specific construction plans required by these Procedures must be filed with the Secretary for the review and written approval by the Director:

   1. plans for extra work areas that would be closer than 50 feet from a waterbody or wetland;

2. plans for major waterbody crossings;

3. plans for the use of a construction right-of-way greater than 75 feet wide in wetlands; and

4. plans for horizontal directional drill (HDD) "crossings" of wetlands or waterbodies.

III. ENVIRONMENTAL INSPECTORS

A. At least one Environmental Inspector having knowledge of the wetland and waterbody conditions in the project area is required for each construction spread. The number and experience of Environmental Inspectors assigned to each construction spread should be appropriate for the length of the construction spread and the number/significance of resources affected.

B. The Environmental Inspector's responsibilities are outlined in the Upland Erosion Control, Revegetation, and Maintenance Plan (Plan).

IV. PRECONSTRUCTION PLANNING

A. A copy of the Stormwater Pollution Prevention Plan (SWPPP) prepared for compliance with the U.S. Environmental Protection Agency's (EPA) National Stormwater Program General Permit requirements must be available in the field on each construction spread. The SWPPP shall contain Spill Prevention and Response Procedures that meet the requirements of state and Federal agencies.

1. It shall be the responsibility of Entrega and its contractors to structure their operations in a manner that reduces the risk of spills or the accidental exposure of fuels or hazardous materials to waterbodies or wetlands. Entrega and its contractors must, at a minimum, ensure that:

   a. all employees handling fuels and other hazardous materials are properly trained;

   b. all equipment is in good operating order and inspected on a regular basis;

   c. fuel trucks transporting fuel to on-site equipment travel only on approved access roads;

d. all equipment is parked overnight and/or fueled at least 100 feet from a waterbody or in an upland area at least 100 feet from a wetland boundary. These activities can occur closer only if the Environmental Inspector finds, in advance, no reasonable alternative and Entrega and its contractors have taken appropriate steps (including secondary containment structures) to prevent spills and provide for prompt cleanup in the event of a spill;

e. hazardous materials, including chemicals, fuels, and lubricating oils, are not stored within 100 feet of a wetland, waterbody, or designated municipal watershed area, unless the location is designated for such use by an appropriate governmental authority. This applies to storage of these materials and does not apply to normal operation or use of equipment in these areas; and

f. concrete coating activities are not performed within l00 feet of a wetland or waterbody boundary, unless the location is an existing industrial site designated for such use.

2. Entrega and its contractors must structure their operations in a manner that provides for the prompt and effective cleanup of spills of fuel and other hazardous materials. At a minimum, Entrega and its contractors must:

   a. ensure that each construction crew (including cleanup crews) has on hand sufficient supplies of absorbent and barrier materials to allow the rapid containment and recovery of spilled materials and knows the procedure for reporting spills;

   b. ensure that each construction crew has on hand sufficient tools and material to stop leaks;

   c. know the contact names and telephone numbers for all local, state, and Federal agencies (including, if necessary, the U. S. Coast Guard and the National Response Center) that must be notified of a spill; and

   d. follow the requirements of those agencies in cleaning up the spill, in excavating and disposing of soils or other materials

contaminated by a spill, and in collecting and disposing of waste generated during spill cleanup.

B. AGENCY COORDINATION

Entrega must coordinate with the appropriate local, state, and Federal agencies as outlined in these Procedures and in the Certificate.

V. WATERBODY CROSSINGS

A. NOTIFICATION PROCEDURES AND PERMITS

1. Apply to the U.S. Army Corps of Engineers (COE), or its delegated agency, for the appropriate wetland and waterbody crossing permits.

2. Provide written notification to authorities responsible for potable surface water supply intakes located within 3 miles downstream of the crossing at least 1 week before beginning work in the waterbody, or as otherwise specified by that authority.

3. Apply for state-issued waterbody crossing permits and obtain individual or generic section 401 water quality certification or waiver.

4. Notify appropriate state authorities at least 48 hours before beginning trenching or blasting within the waterbody, or as specified in state permits.

B. INSTALLATION

1. Time Window for Construction

Unless expressly permitted or further restricted by the appropriate state agency in writing on a site-specific basis, instream work, except that required to install or remove equipment bridges, must occur during the following time windows:

a. coldwater fisheries - June 1 through September 30; and

b. coolwater and warmwater fisheries - June 1 through November 30.

2. Extra Work Areas

a. Locate all extra work areas (such as staging areas and additional spoil storage areas) at least 50 feet away from water's edge, except where the adjacent upland consists of actively cultivated or rotated cropland or other disturbed land.

b. Entrega shall file with the Secretary for review and written approval by the Director, a site-specific construction plan for each extra work area with a less than 50-foot setback from the water's edge, (except where the adjacent upland consists of actively cultivated or rotated cropland or other disturbed land) and a site-specific explanation of the conditions that will not permit a 50-foot setback.

c. Limit clearing of vegetation between extra work areas and the edge of the waterbody to the certificated construction right-of-way.

d. Limit the size of extra work areas to the minimum needed to construct the waterbody crossing.

3. General Crossing Procedures

a. Comply with the COE, or its delegated agency, permit terms and conditions.

b. Construct crossings as close to perpendicular to the axis of the waterbody channel as engineering and routing conditions permit.

c. If the pipeline parallels a waterbody, attempt to maintain at least 15 feet of undisturbed vegetation between the waterbody (and any adjacent wetland) and the construction right-of-way.

d. Where waterbodies meander or have multiple channels, route the pipeline to minimize the number of waterbody crossings.

e. Maintain adequate flow rates to protect aquatic life, and prevent the interruption of existing downstream uses.

f. Waterbody buffers (extra work area setbacks, refueling restrictions, etc.) must be clearly marked in the field with signs and/or highly visible flagging until construction-related ground disturbing activities are complete.

4. Spoil Pile Placement and Control

a. All spoil from minor and intermediate waterbody crossings, and upland spoil from major waterbody crossings, must be placed in the construction right-of-way at least 10 feet from the water's edge or in additional extra work areas as described in section V.B.2.

b. Use sediment barriers to prevent the flow of spoil or heavily silt-laden water into any waterbody.

5. Equipment Bridges

a. Only clearing equipment and equipment necessary for installation of equipment bridges may cross waterbodies prior to bridge installation. Limit the number of such crossings of each waterbody to one per piece of clearing equipment.

b. Construct equipment bridges to maintain unrestricted flow and to prevent soil from entering the waterbody. Examples of such bridges include:

(1) equipment pads and culvert(s);
(2) equipment pads or railroad car bridges without culverts;
(3) clean rock fill and culvert(s); and
(4) flexi-float or portable bridges.

Additional options for equipment bridges may be utilized that achieve the performance objectives noted above. Do not use soil to construct or stabilize equipment bridges.

c. Design and maintain each equipment bridge to withstand and pass the highest flow expected to occur while the bridge is in place. Align culverts to prevent bank erosion or streambed scour. If necessary, install energy dissipating devices downstream of the culverts.

d. Design and maintain equipment bridges to prevent soil from entering the waterbody.

e. Remove equipment bridges as soon as possible after permanent seeding unless the COE, or its delegated agency, authorizes it as a permanent bridge.

f. If there will be more than 1 month between final cleanup and the beginning of permanent seeding and reasonable alternative access to the right-of-way is available, remove equipment bridges as soon as possible after final cleanup.

6. Dry-Ditch Crossing Methods

a. Unless approved otherwise by the appropriate state agency, install the pipeline using one of the dry-ditch methods outlined below for crossings of waterbodies up to 30 feet wide (at the water's edge at the time of construction) that are state-designated as either coldwater or significant coolwater or warmwater fisheries.

b. Dam and Pump

(1) The dam-and-pump method may be used without prior approval for crossings of waterbodies where pumps can adequately transfer streamflow volumes around the work area, and there are no concerns about sensitive species passage.

(2) Implementation of the dam-and-pump crossing method must meet the following performance criteria:

(i) use sufficient pumps, including on-site backup pumps, to maintain downstream flows;
(ii) construct dams with materials that prevent sediment and other pollutants from entering the waterbody (*e.g.*, sandbags or clean gravel with plastic liner);
(iii) screen pump intakes;
(iv) prevent streambed scour at pump discharge; and

(v) monitor the dam and pumps to ensure proper operation throughout the waterbody crossing.

c. Flume Crossing

The flume crossing method requires implementation of the following steps:

(1) install flume pipe after blasting (if necessary), but before any trenching;

(2) use sand bag or sand bag and plastic sheeting diversion structure or equivalent to develop an effective seal and to divert stream flow through the flume pipe (some modifications to the stream bottom may be required in to achieve an effective seal);

(3) properly align flume pipe(s) to prevent bank erosion and streambed scour;

(4) do not remove flume pipe during trenching, pipelaying, or backfilling activities, or initial streambed restoration efforts; and

(5) remove all flume pipes and dams that are not also part of the equipment bridge as soon as final cleanup of the stream bed and bank is complete.

d. Horizontal Directional Drill (HDD)

To the extent they were not provided as part of the pre-certification process, for each waterbody or wetland that would be crossed using the HDD method, provide a plan that includes:

(1) site-specific construction diagrams that show the location of mud pits, pipe assembly areas, and all areas to be disturbed or cleared for construction;

(2) a description of how an inadvertent release of drilling mud would be contained and cleaned up; and

(3) a contingency plan for crossing the waterbody or wetland in the event the directional drill is unsuccessful and how the abandoned drill hole would be sealed, if necessary.

7. Crossings of Minor Waterbodies

Where a dry-ditch crossing is not required, minor waterbodies may be crossed using the open-cut crossing method, with the following restrictions:

a. except for blasting and other rock breaking measures, complete instream construction activities (including trenching, pipe installation, backfill, and restoration of the streambed contours) within 24 hours. Streambanks and unconsolidated streambeds may require additional restoration after this period;

b. limit use of equipment operating in the waterbody to that needed to construct the crossing; and

c. equipment bridges are not required at minor waterbodies that do not have a state-designated fishery classification (*e.g.*, agricultural or intermittent drainage ditches). However, if an equipment bridge is used it must be constructed as described in section V.B.5.

8. Crossings of Intermediate Waterbodies

Where a dry-ditch crossing is not required, intermediate waterbodies may be crossed using the open-cut crossing method, with the following restrictions:

a. complete instream construction activities (not including blasting and other rock breaking measures) within 48 hours, unless site-specific conditions make completion within 48 hours infeasible;

b. limit use of equipment operating in the waterbody to that needed to construct the crossing; and

c. all other construction equipment must cross on an equipment bridge as specified in section V.B.5.

9. Crossings of Major Waterbodies

Before construction, Entrega shall file with the Secretary for the review and written approval by the Director a detailed, site-specific construction plan and scaled drawings identifying all areas to be disturbed by construction for each major waterbody crossing (the scaled drawings are not required for any offshore portions of pipeline projects). This plan should be developed in consultation with the appropriate state and Federal agencies and should include extra work areas, spoil storage areas, sediment control structures, etc., as well as mitigation for navigational issues.

The Environmental Inspector may adjust the final placement of the erosion and sediment control structures in the field to maximize effectiveness.

10. Temporary Erosion and Sediment Control

Install sediment barriers (as defined in section IV.F.2.a. of the Plan) immediately after initial disturbance of the waterbody or adjacent upland. Sediment barriers must be properly maintained throughout construction and reinstalled as necessary (such as after backfilling of the trench) until replaced by permanent erosion controls or restoration of adjacent upland areas is complete. Temporary erosion and sediment control measures are addressed in more detail in the Plan; however, the following specific measures must be implemented at stream crossings:

a. install sediment barriers across the entire construction right-of-way at all waterbody crossings, where necessary to prevent the flow of sediments into the waterbody. In the travel lane, these may consist of removable sediment barriers or driveable berms. Removable sediment barriers can be removed during the construction day, but must be re-installed after construction has stopped for the day and/or when heavy precipitation is imminent;

b. where waterbodies are adjacent to the construction right-of-way, install sediment barriers along the edge of the

construction right-of-way as necessary to contain spoil and sediment within the construction right-of-way; and

c. use trench plugs at all waterbody crossings, as necessary, to prevent diversion of water into upland portions of the pipeline trench and to keep any accumulated trench water out of the waterbody.

11. Trench Dewatering

Dewater the trench (either on or off the construction right-of-way) in a manner that does not cause erosion and does not result in heavily silt laden water flowing into any waterbody. Remove the dewatering structures as soon as possible after the completion of dewatering activities.

C. RESTORATION

1. Use clean gravel or native cobbles for the upper 1 foot of trench backfill in all waterbodies that contain Coldwater fisheries.

2. For open-cut crossings, stabilize waterbody banks and install temporary sediment barriers within 24 hours of completing instream construction activities. For dry-ditch crossings, complete streambed and bank stabilization before returning flow to the waterbody channel.

3. Return all waterbody banks to preconstruction contours or to a stable angle of repose as approved by the Environmental Inspector.

4. Application of riprap for bank stabilization must comply with COE, or its delegated agency, permit terms and conditions.

5. Unless otherwise specified by state permit, limit the use of riprap to areas where flow conditions preclude effective vegetative stabilization techniques such as seeding and erosion control fabric.

6. Revegetate disturbed riparian areas with conservation grasses and legumes or native plant species, preferably woody species.

7. Install a permanent slope breaker across the construction right-of-way at the base of slopes greater than 5 percent that are less than 50

feet from the waterbody, or as needed to prevent sediment transport into the waterbody. In addition, install sediment barriers as outlined in the Plan. In some areas, with the approval of the Environmental Inspector, an earthen berm may be suitable as a sediment barrier adjacent to the waterbody.

8. Sections V.C.3. through V.C.6. above also apply to those perennial or intermittent streams not flowing at the time of construction.

D. POST-CONSTRUCTION MAINTENANCE

1. Limit vegetation maintenance adjacent to waterbodies to allow a riparian strip at least 25 feet wide, as measured from the waterbody's mean high water mark, to permanently revegetate with native plant species across the entire construction right-of-way. However, to facilitate periodic pipeline corrosion/leak surveys, a corridor centered on the pipeline and up to 10 feet wide may be maintained in an herbaceous state. In addition, trees that are located within 15 feet of the pipeline that are greater than 15 feet in height may be cut and removed from the permanent right-of-way.

2. Do not use herbicides or pesticides in or within 100 feet of a waterbody except as allowed by the appropriate land management or state agency.

VI. WETLAND CROSSINGS

A. GENERAL

1. Entrega shall conduct a wetland delineation using the current Federal methodology and file a wetland delineation report with the Secretary before construction. This report shall identify:

   a. by milepost all wetlands that would be affected;

   b. the National Wetlands Inventory (NWI) classification for each wetland;

   c. the crossing length of each wetland in feet; and

   d. the area of permanent and temporary disturbance that would occur in each wetland by NWI classification type.

The requirements outlined in this section do not apply to wetlands in actively cultivated or rotated cropland. Standard upland protective measures, including workspace and topsoiling requirements, apply to these agricultural wetlands.

2. Route the pipeline to avoid wetland areas to the maximum extent possible. If a wetland cannot be avoided or crossed by following an existing right-of-way, route the new pipeline in a manner that minimizes disturbance to wetlands. Where looping an existing pipeline, overlap the existing pipeline right-of-way with the new construction right-of-way. In addition, locate the loop line no more than 25 feet away from the existing pipeline unless site-specific constraints would adversely affect the stability of the existing pipeline.

3. Limit the width of the construction right-of-way to 75 feet or less. Prior written approval of the Director is required where topographic conditions or soil limitations require that the construction right-of-way width within the boundaries of a federally delineated wetland be expanded beyond 75 feet. Early in the planning process Entrega is encouraged to identify site-specific areas where existing soils lack adequate unconfined compressive strength that would result in excessively wide ditches and/or difficult to contain spoil piles.

4. Wetland boundaries and buffers must be clearly marked in the field with signs and/or highly visible flagging until construction-related ground disturbing activities are complete.

5. Implement the measures of sections V. and VI. in the event a waterbody crossing is located within or adjacent to a wetland crossing. If all measures of sections V. and VI. cannot be met, Entrega must file with the Secretary a site-specific crossing plan for review and written approval by the Director before construction. This crossing plan shall address at a minimum:

    a. spoil control;

    b. equipment bridges;

    c. restoration of waterbody banks and wetland hydrology;

d. timing of the waterbody crossing;

e. method of crossing; and

f. size and location of all extra work areas.

6. Do not locate aboveground facilities in any wetlands except where the location of such facilities outside of wetlands would prohibit compliance with U.S. Department of Transportation regulations.

B. INSTALLATION

1. Extra Work Areas and Access Roads

a. Locate all extra work areas (such as staging areas and additional spoil storage areas) at least 50 feet away from wetland boundaries, except where the adjacent upland consists of actively cultivated or rotated cropland or other disturbed land.

b. Entrega shall file with the Secretary for review and written approval by the Director, a site-specific construction plan for each extra work area with a less than 50-foot setback from wetland boundaries (except where adjacent upland consists of actively cultivated or rotated cropland or other disturbed land) and a site-specific explanation of the conditions that will not permit a 50-foot setback.

c. Limit clearing of vegetation between extra work areas and the edge of the wetland to the certificated construction right-of-way.

d. The construction right-of-way may be used for access when the wetland soil is firm enough to avoid rutting or the construction right-of-way has been appropriately stabilized to avoid rutting (*e.g.*, with timber riprap, prefabricated equipment mats, or terra mats).

In wetlands that cannot be appropriately stabilized, all construction equipment other than that needed to install the wetland crossing shall use access roads located in upland areas. Where access roads in upland areas do not provide

reasonable access, limit all other construction equipment to one pass through the wetland using the construction right-of-way.

e. The only access roads, other than the construction right-of-way, that can be used in wetlands without Director approval, are those existing roads that can be used with no modification and no impact on the wetlands

2. Crossing Procedures

a. Comply with COE, or its delegated agency, permit terms and conditions

b. Assemble the pipeline in an upland area unless the wetland is dry enough to adequately support skids and pipe.

c. Use "push-pull" or "float" techniques to place the pipe in the trench where water and other site conditions allow.

d. Minimize the length of time that topsoil is segregated and the trench is open.

e. Limit construction equipment operating in wetland areas to that needed to clear the construction right-of-way, dig the trench, fabricate and install the pipeline, backfill the trench, and restore the construction right-of-way.

f. Cut vegetation just aboveground level, leaving existing root systems in place, and remove it from the wetland for disposal.

g. Limit pulling of tree stumps and grading activities to directly over the trenchline. Do not grade or remove stumps or root systems from the rest of the construction right-of-way in wetlands unless the Chief Inspector and Environmental Inspector determine that safety related construction constraints require grading or the removal of tree stumps from under the working side of the construction right-of-way.

h. Segregate the top 1 foot of topsoil from the area disturbed by trenching, except in areas where standing water is present or soils are saturated or frozen. Immediately after backfilling is

complete, restore the segregated topsoil to its original location.

i. Do not use rock, soil imported from outside the wetlands tree stumps, or brush riprap to support equipment on the construction right-of-way.

j. If standing water or saturated soils are present, or if construction equipment causes ruts or mixing of the topsoil and subsoil in wetlands, use low-ground-weight construction equipment, or operate normal equipment on timber riprap, prefabricated equipment mats, or terra mats.

k. Do not cut trees outside of the approved construction work area to obtain timber for riprap or equipment mats.

1. Attempt to use no more than two layers of timber riprap to support equipment on the construction right-of-way.

m. Remove all project-related material used to support equipment on the construction right-of-way upon completion of construction.

3. Temporary Sediment Control

Install sediment barriers (as defined in section IV.F.2.a. of the Plan) immediately after initial disturbance of the wetland or adjacent upland. sediment barriers must be properly maintained throughout construction and reinstalled as necessary (such as after backfilling of the trench). Except as noted below in section VI.B.3.c., maintain sediment barriers until replaced by permanent erosion controls or restoration of adjacent upland areas is complete. Temporary erosion and sediment control measures are addressed in more detail in the Plan.

a. Install sediment barriers across the entire construction right-of-way immediately upslope of the wetland boundary at all wetland crossings where necessary to prevent sediment flow into the wetlands

b. Where wetlands are adjacent to the construction right-of-way and the right-of-way slopes toward the wetlands install

sediment barriers along the edge of the construction right-of-way as necessary to prevent sediment flow into the wetlands

c. Install sediment barriers along the edge of the construction right-of-way as necessary to contain spoil and sediment within the construction right-of-way through wetlands. Remove these sediment barriers during right-of-way cleanup.

4. Trench Dewatering

Dewater the trench (either on or off the construction right-of-way) in a manner that does not cause erosion and does not result in heavily silt laden water flowing into any wetlands Remove the dewatering structures as soon as possible after the completion of dewatering activities.

C. RESTORATION

1. Where the pipeline trench may drain a wetland, construct trench breakers and/or seal the trench bottom as necessary to maintain the original wetland hydrology.

2. For each wetland crossed, install a trench breaker at the base of slopes near the boundary between the wetland and adjacent upland areas. Install a permanent slope breaker across the construction right-of-way at the base of slopes greater than 5 percent where the base of the slope is less than 50 feet from the wetland, or as needed to prevent sediment transport into the wetland. In addition, install sediment barriers as outlined in the Plan. In some areas, with the approval of the Environmental Inspector, an earthen berm may be suitable as a sediment barrier adjacent to the wetland.

3. Do not use fertilizer, lime, or mulch unless required in writing by the appropriate land management or state agency.

4. Consult with the appropriate land management or state agency to develop a project-specific wetland restoration plan. The restoration plan should include measures for re-establishing herbaceous and/or woody species, controlling the invasion and spread of undesirable exotic species (*e.g.*, purple loosestrife and phragmites), and monitoring the success of the revegetation and weed control efforts. Provide this plan to the FERC staff upon request.

5. Until a project-specific wetland restoration plan is developed and/or implemented, temporarily revegetate the construction right-of-way with annual ryegrass at a rate of 40 pounds/acre (unless standing water is present).

6. Ensure that all disturbed areas successfully revegetate with wetland herbaceous and/or woody plant species.

7. Remove temporary sediment barriers located at the boundary between wetland and adjacent upland areas after upland revegetation and stabilization of adjacent upland areas are judged to be successful as specified in section VII.A.5. of the Plan.

D. POST-CONSTRUCTION MAINTENANCE

1. Do not conduct vegetation maintenance over the full width of the permanent right-of-way in wetlands. However, to facilitate periodic pipeline corrosion/leak surveys, a corridor centered on the pipeline and up to 10 feet wide may be maintained in an herbaceous state. In addition, trees within 15 feet of the pipeline that are greater than 15 feet in height may be selectively cut and removed from the permanent right-of-way.

2. Do not use herbicides or pesticides in or within 100 feet of a wetlands except as allowed by the appropriate land management agency or state agency.

3. Monitor and record the success of wetland revegetation annually for the first 3 years after construction or until wetland revegetation is successful. At the end of 3 years after construction, file a report with the Secretary identifying the status of the wetland revegetation efforts. Include the percent cover achieved and problem areas (weed invasion issues, poor revegetation, etc.). Continue to file a report annually until wetland revegetation is successful.

4. Wetland revegetation shall be considered successful if the cover of herbaceous and/or woody species is at least 80 percent of the type, density, and distribution of the vegetation in adjacent wetland areas that were not disturbed by construction. if revegetation is not successful at the end of 3 years, develop and implement (in consultation with a professional wetland ecologist) a remedial

revegetation plan to actively revegetate the wetlands Continue revegetation efforts until wetland revegetation is successful.

VII. HYDROSTATIC TESTING

A. NOTIFICATION PROCEDURES AND PERMITS

1. Apply for state-issued water withdrawal permits, as required.

2. Apply for National Pollutant Discharge Elimination System (NPDES) or state-issued discharge permits, as required.

3. Notify appropriate state agencies of intent to use specific sources at least 48 hours before testing activities unless they waive this requirement in writing.

B. GENERAL

1. Perform 100 percent radiographic inspection of all pipeline section welds or hydrotest the pipeline sections, before installation under waterbodies or wetlands.

2. If pumps used for hydrostatic testing are within 100 feet of any waterbody or wetlands address the operation and refueling of these pumps in the project's Spill Prevention and Response Procedures.

3. Entrega shall file with the Secretary before construction a list identifying the location of all waterbodies proposed for use as a hydrostatic test water source or discharge location.

C. INTAKE SOURCE AND RATE

1. Screen the intake hose to prevent entrainment of fish.

2. Do not use state-designated exceptional value waters, waterbodies which provide habitat for federally listed threatened or endangered species, or waterbodies designated as public water supplies, unless appropriate Federal, state, and/or local permitting agencies grant written permission.

3. Maintain adequate flow rates to protect aquatic life, provide for all waterbody uses, and provide for downstream withdrawals of water by existing users.

4. Locate hydrostatic test manifolds outside wetlands and riparian areas to the maximum extent practicable.

D. DISCHARGE LOCATION, METHOD, AND RATE

1. Regulate discharge rate, use energy dissipation device(s), and install sediment barriers, as necessary, to prevent erosion, streambed scour, suspension of sediments, or excessive streamflow.

2. Do not discharge into state-designated exceptional value waters, waterbodies which provide habitat for federally listed threatened or endangered species, or waterbodies designated as public water supplies, unless appropriate Federal, state, and local permitting agencies grant written permission.

APPENDIX C

ENTREGA'S CONSTRUCTION, MITIGATION, AND RECLAMATION PLAN

THIS PLAN IS PART OF THE BLM'S DRAFT PLAN OF DEVELOPMENT (POD). SECTIONS OF (OR ATTACHMENTS TO) THE POD REFERENCED IN THIS PLAN ARE NOT INCLUDED IN THIS APPENDIX.

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SECTION 2 Construction Mitigation and Reclamation Plan

1.0 Plan Objectives

The purpose of this Construction Mitigation and Reclamation (CM&R) Plan is to identify the construction mitigation and reclamation measures that Entrega will utilize to minimize impacts on environmental resources and promote successful reclamation of those resources affected by the Entrega Gas Pipeline Project.

Entrega will utilize mitigation measures that support:

- stabilization of disturbed sites by reducing runoff and erosion;
- reestablishment of vegetation to preconstruction conditions;
- reestablishment of visual resources to meet visual management objectives of the BLM;
- reduction of visual contrast and enhancement of aesthetics values;
- restoration of the functional qualities of the area, including wildlife habitat and livestock forage;
- prevention of surface water and wetland degradation; and,
- protection of off right-of-way areas.

To achieve these objectives, Entrega will use general and site specific construction mitigation measures, which include:

- installation and maintenance of temporary and permanent erosion and sediment control devices;
- preservation and replacement of native topsoil and seed sources, restoration of soil horizons and reestablishment of original surface conditions to enhance the development of a stable vegetative community, and reclamation of the project area with perennial native grasses, forbs, and shrub species;
- utilization of site specific plans for certain visually sensitive areas;
- implementation of a Conservation Measure Plan to avoid or minimize impacts on sensitive species and habitat;
- use of temporary and permanent treatments to stabilize streambed and banks, riparian and wetland vegetation, minimize sediment discharge into waterbodies, and prevent pipeline exposure from streambed scour; and
- rehabilitation of stream beds and banks and riparian areas, and reestablishment of original drainage conditions.

To maximize reclamation potential, Entrega will implement general and site specific restoration measures, including:

- preservation of topsoil, native seed sources, and root stock;
- limiting the amount of time between final grading and reseeding;
- preparation of an adequate seedbed, including decompaction;
- use of seed mixtures compatible to the native vegetative community and soil conditions;
- careful monitoring of the seeding rate;

- mulching high erosion potential areas;
- installation of diversion berms to reduce the runoff volume produced on a sloping areas and minimizing the runoff energy to detach soil particles;
- slope reduction to reduce the erosion hazard; and,
- prevention of off road use on the right-of-way by constructing barriers at appropriate locations.

2.0 Environmental Construction Mitigation and Reclamation Measures

Entrega will implement general construction mitigation and reclamation measures during project activities to reduce or avoid impacts on environmental resources. Additionally, Entrega will use special construction and reclamation methods, including site-specific plans, to further minimize impacts on sensitive environmental resources.

2.1 General Construction Mitigation and Reclamation Measures

Section 1 of this document describes standard pipeline and aboveground facility construction procedures. General construction mitigation and reclamation measures that will be utilized during the project are discussed below.

2.1.1 Topsoil Segregation

On BLM- and state-managed land, topsoil will be stripped and segregated from the ditch line only, except in areas that require grading (*i.e.*, cut and fill areas). Where cutting and filling is required, topsoil will be segregated from the graded area only if topsoil is present. The EI will determine the presence of topsoil in areas where topsoil may not be clearly distinguishable from subsoil. However, six inches of "surface soil" will be stripped and treated as topsoil throughout the project, where appropriate, as directed by the BLM. Entrega will attempt to strip the topsoil layer to the depth of the actual topsoil horizon.. Topsoil will be returned to its original horizon after subsoil is backfilled in the trench.

In areas where there is a need to separate topsoil from subsoil, topsoil will be graded toward the working side prior to trenching.. Segregated topsoil will be stockpiled on the nonworking side of the construction ROW except where precluded by space limitations. Where topsoil will be removed from the trenchline only, two-pass trenching with a wheel ditcher or topsoil stripping with a backhoe will be used. If a wheel ditcher is used, the first pass will remove topsoil from the trenchline and the second pass will remove subsoil. The approximate ditch width will be 14 to 16 feet, which is the blade width of a standard wheel ditcher. The soils from each of the excavations will be placed in separate locations, which allows for proper placement of the topsoil horizon during the backfilling process. Gaps will be left between the spoil piles to prevent stormwater runoff from backing up or flooding. If a backhoe is used, topsoil will be carefully removed and stored in a separate pile, and then the subsoil will be excavated from the trench and stored separately from the topsoil pile. The ditch will separate top- from subsoils.

The BLM Monitor or EI may require Entrega to remove topsoil from the full width of the ROW if excessive rutting or pulverizing of topsoil occurs in travel lanes along the construction ROW. This stipulation will apply only in areas where rutting exceeds 4 inches or the mixing of topsoil with subsoil is visually apparent to the inspectors.

Topsoil will not be stored in drainage channels, used as pipe padding material, or used as the base for permanent diversion berms. Silt fence will be installed around topsoil piles as necessary to prevent the discharge of sediment into surface waters. Mixing of surface rock with topsoil will occur only in areas where surface rock will be spread across on the ROW during reclamation.

On private land, Entrega will comply with the landowner's topsoil segregation requirements; otherwise, Entrega will strip and segregate topsoil from the ditch line only in the same manner described above for BLM- and state- managed lands.

2.1.2 Rock Removal and Replacement

Surface Rock

Where present and useful for reclamation, surface rock will be removed from the trench and stockpiled along the edge of the work areas. After construction, rock will be spread across the ROW. Salvaged surface rock will be placed to blend with off-ROW areas during restoration in nonagricultural areas to conceal the corridor from adjacent undisturbed areas and to act as a mulch to minimize erosion. If spreading rock over the ROW will prevent the safe operation and maintenance of the pipeline, it will be removed and properly disposed. Rock may be stockpiled on the ROW edge near existing roads to prevent public use.

Bedrock

Bedrock excavated on BLM land will be backfilled to the top of the bedrock profile. Large rock not suitable as backfill material and excess rock will be stored at the edge of the ROW during construction. This rock will be scattered across the construction ROW, or transported off the ROW and disposed of in an approved area.

2.1.3 Trench Dewatering

Where trench dewatering is required for lowering the pipeline, padding, tie-in welds, or other construction activities, trench water will be pumped at a controlled rate onto a well-vegetated or stable upland site, or into a dewatering structure or filter bag to minimize erosion (see Figure XX in appendix A). Water pumped or drained from the construction ROW will not be discharged directly into waterbodies or wetlands, or over the top of known cultural resource sites.

2.1.4 Trench Breakers

Permanent trench breakers consisting of stacked sand bags or foam will be installed around the pipe in the trench to prevent subsurface channeling of water along the trench. Trench breakers will be installed on both sides of perennial waterbodies, and where needed to avoid draining wetlands and waterbodies.

Topsoil will not be used for trench breakers. Permanent trench breakers will be installed on slopes just before backfilling at intervals determined by the EI.

2.1.5 Erosion and Sediment Control

Entrega will control erosion and sedimentation using a variety of different methods as appropriate for the protection of environmental resources.

Temporary Erosion and Sediment Control

Temporary erosion and sediment control devices, including slope breakers and sediment barriers, will be installed promptly after soil disturbance and as directed by the BLM Monitor or EI. These devices will be inspected on a daily basis in areas of active construction; on a weekly basis in areas with no active construction; and within 24 hours of each 0.5-inch or greater rainfall.

Temporary slope breakers (*e.g.*, hay bales, silt fence, earthen berms) will be constructed and maintained according to the specifications and recommendations of the BLM or NRCS. In the absence of these recommendations, Entrega will use the slope-dependent spacings indicated in its Upland Erosion Control, Revegetation, and Maintenance Plan.

Table 2.1.5-1 provides the spacing intervals of temporary berms by percent of slope. Berms will be installed with a 2 to 6 percent gradient and will provide a minimum depth of 18 inches. Typical temporary berm installation methods are illustrated on the drawings included in appendix A.

TABLE 2.1.5-1

Entrega Gas Pipeline Project
Diversion Berm Spacing

Percent slope	Spacing interval
1-5 percent	300 feet
5- 15 percent	200 feet
15-25 percent	100 feet
Greater than 25 percent	50-75 feet at the discretion of the EI

Entrega will install temporary sediment barriers such as silt fence or staked straw bales, on either side of a waterbody channel across the width of the construction ROW; around spoil and topsoil stockpiles to prevent sediment runoff into a waterbody; at the edge of the ROW to contain topsoil or trench spoil and prevent flow of sediment into adjacent areas; and, at locations identified by the environmental monitors. Sediment barriers will be maintained as necessary to ensure effectiveness during construction.

In steep terrain, temporary sediment barriers will be installed during clearing to prevent the movement of disturbed soil off the right-of-way. Temporary slope breakers consisting of mounded and compacted soil will be installed across the right-of-way during grading. Where waterbodies or wetlands are located at the base of slopes, temporary sediment barriers will be installed where necessary until revegetation of adjacent upland areas is successful. Once revegetation is successful, sediment barriers will be removed from the right-of-way and disposed of properly.

Several areas of the project from approximately Wamsutter, Wyoming to Laramie, Wyoming can experience high, sustained winds. In an effort to preserve topsoil during trenching activities, Entrega will periodically water down topsoil piles. This will create a natural crust on the soil which will facilitate keeping it in place until backfilling is scheduled to begin.

Permanent Erosion and Sediment Control

Permanent slope breakers (diversion berms) will be constructed according to BLM standards and in accordance with Entrega's Upland Erosion Control, Revegetation, and Maintenance Plan. Permanent slope breakers will be installed across the full width of the ROW where needed to prevent and divert runoff from the ROW to adjacent stable areas. Slope breakers will be installed to drain down slope at an approximate gradient of 2 to 6 percent and will extend 3 to 4 feet into undisturbed, stable areas at the edge of the construction ROW. Slope breakers will provide a minimum height of 18 inches from the up-slope channel and the berm top. Topsoil will be not used to construction diversion berms and berms will be compacted after installation. If necessary, energy dissipation devices will also be installed to prevent soil runoff or sink holes.

Diversion berms will also be installed at the edges of wetland crossings and the banks of waterbodies if the approaches slope toward the waterbody or wetlands or as directed by the BLM Monitor or EI.

In rocky areas where the surface is resistant to erosion, diversion berms may be omitted or have increased spacing. The BLM Monitor or EI will identify rocky areas that do not require diversion berms.

Spacing of diversion berm will be constructed according to Table 2.1.5 or as directed by the BLM Monitor or EI.

2.1.6 Fencing

Entrega is responsible for contacting grazing lessees prior to crossing any fence on public lands, or any fence between public and private land, and for offering the lessees an opportunity to be present when the fence cut(s) is/are made so the lessees can be satisfied that the fence is adequately braced and secured (see Figure XX in Appendix A). The grazing permittee will be contacted by a representative of the ROW holder and/or contractor prior to commencing pipeline construction and reclamation on their respective allotment. Before cutting the wires for pipeline construction, each fence crossed by the ROW will be braced and secured to prevent slacking of the wire. The opening created will be temporarily closed when construction crews leave the project area to prevent passage of livestock. Any gaps in natural barriers used for livestock control created by construction activity will be fenced according to BLM requirements or landowner's instructions.

Several fences and water pipelines may be crossed, or are parallel to the construction ROW. If parallel, a minimum of ten feet of undisturbed area will be maintained between the Entrega pipeline and fence or water lines, if possible. Entrega will attempt to avoid livestock and/or wildlife water pipelines during construction. If construction damage occurs, water pipelines (and fences) will be repaired according to the BLM or landowner

specifications. If needed, an emergency source of wildlife or livestock water will be provided by Entrega.

If required by the BLM or landowner, Entrega will erect temporary fences on the ROW boundaries after reseeding to prevent cattle from disturbing the seedbed and emerging seedlings. Fences and gates will conform will BLM standards and specifications.

All existing improvements, such as fences, gates, irrigation ditches, cattle guards and reservoirs will be maintained during construction and repaired to pre-construction conditions or better.

2.1.7 Blasting

Entrega's Blasting Plan (Appendix F) identifies blasting procedures, including safety, use, storage, and transportation of explosives, that are consistent with minimum safety requirements as defined by Federal, state, and local regulations. The plan also addresses environmental aspects of blasting activities and identifies areas of concern along the pipeline route.

2.1.8 Cleanup

Cleanup will begin after backfilling, as soon as weather and site conditions permit. Every reasonable effort will be made to complete final cleanup within 20 days after backfilling (10 days in residential areas). Construction debris, with the exception of salvaged vegetation to be used during restoration, will be removed from the ROW and transported to a disposal facility.

2.1.9 Topsoil Replacement

Topsoil will be distributed evenly over the area from which it was removed after grading activities are complete. Special care will be taken not to mix topsoil with subsoil during this procedure, and Entrega will attempt to restore soil horizon functionality, to the extent possible, to facilitate natural and physical biological influences. Entrega will leave the surface rough and irregular after topsoil replacement to provide a more suitable seedbed (*e.g.*, depressions for moisture collection, wind protection, and erosion control).

2.1.10 Recontouring

Preconstruction contours will be restored to the extent practicable. No portion of the trenchline will be crowned as snow melt or rain events could hinder natural runoff and inadvertently create wash out areas or the ponding of water.

Contours will be established using tractors, backhoes, bulldozers, and/or graders, except in steep ravines where the slope of the ROW may be reduced to stabilize the area. A 3:1 slope may be used in these areas of the ROW.

2.1.11 Revegetation

Seedbed Preparation

Seedbed preparation will consist of scarification of compacted soils, if required; rough disking; recontouring the construction ROW to conform to adjacent areas where soil conditions allow, as described in 2.1.10, Section 2; and, topsoil replacement as described in 2.1.9, Section 2.

In compacted soils, Entrega will scarify or rip the area to a depth of 6 to 12 inches using a disk, chisel or para plow, or other similar tillage equipment until the soil density is comparable to areas off the construction ROW. If ripped, the ripper shanks will be set apart 12-18 inches. Topsoil will be replaced after decompaction is completed. Sandy soils will not be scarified.

In upland soils not compacted during construction, Entrega will disk (or harrow) the construction ROW approximately 2-6 inches deep to roughen the surface to enhance water and root penetration.

In compacted soils, after the soil is scarified or disked, topsoil segregated from the construction ROW prior to construction will be replaced evenly over the area from which it was removed, except in drainage channels.

To create a firm seedbed and create small depressions in highly erodible soils, Entrega will use a non-directional imprinting device (*e.g.*, sheep's foot roller or similar device) if the seed is not drilled. Depressions produced with the imprinting device reduce wind erosion, improve the micro-environmental conditions by retention of moisture, aid in the collection of wind-blown seeds, and supply partial shading against direct sunlight. A tacifier may be used after seed application in areas where wind erosion or steep slopes are present.

Seeding Schedule

Seeding will typically occur as soon as practical after topsoil replacement, but in some areas seeding may be delayed by weather. Based on a recommendation by the CDOW, in areas where sagebrush seed is a component of the seed mix, sage may be separately spread in winter of the same year, during a second pass, to facilitate growth. Sage seed mixes may be applied even if snow cover is present.

In areas where access along the ROW is required for vehicular travel to hydrostatic test section tie-ins, pipeline drying, or valve sites, the travel lane may not be restored or seeded concurrently with ROW restoration. A separate crew will restore the travel lane when contractor access along the ROW becomes unnecessary.

Seeding Methods

Entrega will generally use one of three seeding methods, including seed drill, mechanized broadcast (cyclone) seeder on a tractor, and hand cyclone seeder. Alternatively, in highly erodible soils, Entrega may use a non-directional imprinting device (*e.g.*, sheep's foot roller or similar device). Entrega's intent is to incorporate the

seed to an average depth of 0.25-0.50 inch, but not exceeding 1 inch in depth, and to cover the seed eliminating air pockets.

A seed drill will be used to distribute seed on the right-of-way where slopes and soil conditions allow. The seed drill will be calibrated according to the manufacturer's recommendations prior to use and a known amount of seed will be used over a known area to monitor the calibration of the equipment. Care will be taken to ensure light seed (*e.g.*, winter fat) is evenly applied with heavier seed. In Colorado, sage brush seed distribution may be increased in areas where sage brush naturally occurs in denser clusters.

A hand-operated or mechanically-powered cyclone seeder will be used when a seed drill is not suitable. The seeding rate will be doubled where a broadcast seeder is used. This method distributes the seeds on the surface and the seeds are subsequently covered by use of a cultipacker, rake, or dragging a chain behind the seeding equipment. Hand-operated cyclone seeders will be used on slopes too steep for equipment to be operated safely. If rock is not present in these areas, hand dragging or raking will be used to incorporate the seed.

In Wyoming, Entrega may water down some areas after seeding as an additional measure against wind erosion.

Hydroseeding and hydro mulching are not expected to be used except in areas where conventional seeding and mulching techniques cannot be applied (*i.e.*, slopes exceeding 25 percent), or when requested by the landowner or land-managing agency. The seeding rate during hydroseeding will be broadcast application rate (*i.e.*, twice the drilled rate). Mulch will be applied at a rate of 2,000 pounds per acre and will be anchored with a tackifier on slopes exceeding 25 percent. Only organic, non-toxic tackifiers will be used.

Seeding Mixtures

Seed mixtures that will be used to revegetate the ROW are based on consultations with the Rawlins, Little Snake, and White River Field Offices, Colorado Division of Wildlife, Colorado State Land Board, and local Natural Resource Conservation Service offices.

Entrega will use seed that is tested to ensure compliance with Federal and state seed requirements and certified for germination and pure live seed content. If the supply of a specific seed is limited or unavailable at the time of ordering, Entrega will consider alternative species subject to approval of the BLM. Alternative species are included in this CM&R Plan.

In areas where the pipeline is in sagebrush habitat and adjacent to existing right-of-way, Entrega will add sagebrush to the seed mix in areas identified by the BLM or landowner, to avoid a break in habitat and a change in migration corridors. The seeding rate may be increased in areas where dense clusters of sagebrush are present.

Entrega will use the following seed mixtures in respective vegetative communities and land uses.

Colorado Mix 1-Sagebrush Steppe/Sagebrush Scrub Communities

The sagebrush steppe and sagebrush scrub communities occur in semi-arid areas (10- to 14-inch precipitation) on gently sloping (1 to 8 percent) terrain at elevations from about 5,700 to 7,500 feet. In the project area, they occur throughout western Colorado (MPs -0.5 to 85). Sagebrush steppe is distinguished from sagebrush scrub by containing greater than 50 percent understory of grasses and forbs. Both of these communities are dominated by big sagebrush. Other common species include: broom snakeweed, rabbitbrush, prickly pear cactus, mountain mahogany, ephedra, fourwing saltbush, winterfat, blue grama, bottlebrush squirreltail, Indian ricegrass, needlegrasses, and western wheatgrass.

The seeding mixture proposed for these communities will provide erosion control, suitable livestock grazing species, and palatable wildlife forage.

TABLE 2.1.11-1

Entrega Gas Pipeline Project
Colorado Mix 1 (CM#1)
Sagebrush Community Seeding Mix

Species	Seeding Rate in Lbs/acre/PLS a/	
	Drilled	Broadcast
Western wheatgrass-Rosanna	2	4
Indian ricegrass-Nezpar, Rimrock	2	4
Thickspike wheatgrass-Critana	2	4
Green needlegrass-Lodorm	2	4
Bluebunch wheatgrass-Whitmar	1	2
Globemallow	0.5	1

a/ Seeding mix may be modified based on site-specific conditions, identification of additional species for rapid site stabilization, species success in other restoration efforts, and seed availability. An alterative seeding rate may be used if the mixture is modified, if the BLM modifies the rate, or a landowner requests an alternative seeding rate.

Alternative species that may be used in this mix include fourwing saltbush, balsamroot, and Utah sweetvetch.

Colorado Mix 2-Juniper Woodland Community

The Juniper woodland community is typically located on slopes and higher elevations and occurs primarily in patches between MPs 12.0 to 38.3. Dominate species include Utah juniper and pinyon pine. Associated shrub species include broom snakeweed, mountain mahogany, big sagebrush, and rabbitbrush. Common grasses include neelegrasses, Indian ricegrass, western wheatgrass, and Sandberg bluegrass.

The seeding mixture proposed for this community will provide erosion control, suitable livestock grazing species, and palatable wildlife forage.

TABLE 2.1.11-2 **Entrega Gas Pipeline Project Colorado Mix 2 (CM#2) Juniper Woodland Community Seeding Mix**		
Species	Seeding Rate in Lbs/acre/PLS a/	
	Drilled	Broadcast
Western wheatgrass-Rosanna	2	4
Bluebunch wheatgrass-Secar, Whitmar	2	4
Thickspike wheatgrass-Critana	2	4
Inidan ricegrass-Rimrock, Nezpar	1	2
Fourwing saltbush-Wytana	1	2
Utah sweetvetch	1	2

a/ Seeding mix may be modified based on site-specific conditions, identification of additional species for rapid site stabilization, species success in other restoration efforts, and seed availability. An alterative seeding rate may be used if the mixture is modified, if the BLM modifies the rate, or a landowner requests an alternative seeding rate.

Alternative species that may be used in this mix include needleandthread and globemallow.

Colorado Mix 3-Range Land

The majority of agricultural (range) land crossed in Colorado occurs on private land between MPs -0.5 and 33.5, and is primarily composed of irrigated hay and alfalfa meadows adjacent many of the larger riparian corridors and pasture lands used for grazing purposes. Entrega's line list will specify the seed mix requested by the landowners; however, if a landowner has not indicated a seed mix preference, the following mix will be use as an alternative.

TABLE 2.1.11-3 **Entrega Gas Pipeline Project Colorado Mix 3 (CM#3) Range Land Option**		
Species	Seeding Rate in Lbs/acre/PLS a/	
	Drilled	Broadcast
Inidan ricegrass-Rimrock, Nezpar	3	6
June grass	3	6
Needleandthread	2	4
Cicer milkvetch-Monarch	1	2

a/ Seeding mix may be modified based on site-specific conditions, identification of additional species for rapid site stabilization, species success in other restoration efforts, and seed availability. An alterative seeding rate may be used if the mixture is modified, if the BLM modifies the rate, or a landowner requests an alternative seeding rate.

Alternative species that may be used in this mix include alfalfa, Russian wildrye (Vinall), and western wheatgrass.

Wyoming Mix 1-Sagebrush Steppe/Sagebrush Scrub Communities

The sagebrush steppe and sagebrush scrub communities occur in semi-arid areas (10- to 14-inch precipitation) on gently sloping (1 to 8 percent) terrain at elevations from about 5,700 to 7,500 feet. In the project area, they occur throughout much of central and western Wyoming (MPs 88 to 266). Sagebrush steppe is distinguished from sagebrush scrub by containing greater than 50 percent understory of grasses and forbs. Both of these communities are dominated by big sagebrush. Other common species include: broom snakeweed, rabbitbrush, prickly pear cactus, mountain mahogany, ephedra, fourwing saltbush, winterfat, blue grama, bottlebrush squirreltail, Indian ricegrass, needlegrasses, and western wheatgrass.

The majority of agricultural (range) land crossed in Wyoming occurs on private land and is primarily composed of irrigated hay and alfalfa meadows adjacent many of the larger riparian corridors and pasture lands used for grazing purposes. Entrega's line list will specify the seed mix requested by the landowners; however, if a landowner has not indicated a seed mix preference, the sagebrush communities seed mix (WM#1) or the prairie communities seed mix (WM#4) will be use as an alternative, based on surrounding vegetation.

The seeding mixture proposed for these communities will provide erosion control, suitable livestock grazing species, and palatable wildlife forage.

TABLE 2.1.11-4

Entrega Gas Pipeline Project
Wyoming Mix 1 (WM#1)
Sagebrush Communities Seeding Mix

Species	Seeding Rate in Lbs/acre/PLS [a/]	
	Drilled	Broadcast
Thickspike wheatgrass-Critana	4	8
Indian ricegrass-Nezpar	2	4
Western wheatgrass-Rosana	2	4
Needleandthread	2	4
Big sagebrush-Wyoming [b/]	0.5	1
Gardner's saltbush	1	2

a/ Seeding mix may be modified based on site-specific conditions, identification of additional species for rapid site stabilization, species success in other restoration efforts, and seed availability. An alterative seeding rate may be used if the mixture is modified, if the BLM modifies the rate, or a landowner requests an alternative seeding rate.

b/ Big sagebrush seed will be spread independently of the rest of the seed mix to promote germination.

Alternative species that may be used in this mix include bottlebrush squirreltail, slender wheatgrass, shadscale, fourwing saltbush, scarlet globemallow, and Lewis' flax.

Wyoming Mix 2-Pinyon-Juniper Woodland Community

The Juniper woodland community is typically located on slopes and higher elevations and occurs in several smaller areas in the extreme southern portion of Sweetwater

County (MPs 85.7 to 94). Dominate species include Utah juniper and pinyon pine. Associated shrub species include broom snakeweed, mountain mahogany, big sagebrush, and rabbitbrush. Common grasses include neelegrasses, Indian ricegrass, western wheatgrass, and Sandberg bluegrass.

The seeding mixture proposed for this community will provide erosion control, suitable livestock grazing species, and palatable wildlife forage.

TABLE 2.1.11-5

Entrega Gas Pipeline Project
Wyoming Mix 2 (WM#2)
Juniper Woodland Community Seeding Mix

Species	Seeding Rate in Lbs/acre/PLS [a/]	
	Drilled	Broadcast
Western wheatgrass-Rosana	4	8
Indian ricegrass-Nezpar	2	4
Thickspike wheatgrass-Critana	2	4
Slender wheatgrass-Pryor	2	4
Big sagebrush-Wyoming [b/]	0.5	1
Serviceberry	1	2

a/ Seeding mix may be modified based on site-specific conditions, identification of additional species for rapid site stabilization, species success in other restoration efforts, and seed availability. An alterative seeding rate may be used if the mixture is modified, if the BLM modifies the rate, or a landowner requests an alternative seeding rate.

b/ Big sagebrush seed will be spread independently of the rest of the seed mix to promote germination.

Alternative species that may be used in this mix include bluebunch wheatgrass, green needlegrass, basin wildrye, antelope bitterbrush, snowberry, and Lewis' flax.

Wyoming Mix 3-Salt Desert Scrub Community

The salt desert scrub community occurs in arid areas (6- to 10-inch precipitation) at elevations of about 3,100 to 8,500 feet. It can typically be found on fine-textured, poorly drained soils with high alkalinity and/or salinity, often with a high water table. Salt desert shrub occurs as a mosaic within sagebrush communities, frequently on the fringes of playas, desert lakes, ponds, rivers, and streams, and can be found in small scattered patches within the project area in western Wyoming (MPs 117, 160 to 164, and 180 to 183). Within the pipeline alignment, this vegetation community is dominated by greasewood, but features a mixture of other shrub species including saltbush species, spiny hopsage, and winterfat.

The seeding mixture proposed for this community will provide erosion control, suitable livestock grazing species, and palatable wildlife forage.

TABLE 2.1.11-6 **Entrega Gas Pipeline Project** **Wyoming Mix 3 (WM#3)** **Salt Desert Scrub Community Seeding Mix**		
Species	**Seeding Rate in Lbs/acre/PLS a/**	
	Drilled	**Broadcast**
Western wheatgrass-Rosana	4	8
Slender wheatgrass-Pryor	2	4
Indian ricegrass-Nezpar	2	4
Bottlebrush squirreltail	2	4
Gardner's saltbush	1	2
Common winterfat	1	2
a/ Seeding mix may be modified based on site-specific conditions, identification of additional species for rapid site stabilization, species success in other restoration efforts, and seed availability. An alterative seeding rate may be used if the mixture is modified, if the BLM modifies the rate, or a landowner requests an alternative seeding rate.		

Alternative species that may be used in this mix include bluebunch wheatgrass, thickspike wheatgrass, basin wildrye, shadscale, and fourwing saltbush.

Wyoming Mix 4-Prairie Communities

Shortgrass prairie occurs in areas of extreme hot and cold climatic conditions and low precipitation (10- to 21-inch), and is found at elevations ranging from about 5,100 to 6,800 feet. Mixed grass prairie occurs throughout most of eastern Wyoming and typically supports a high diversity of grasses, including short, mid, and tall grass species. Shortgrass and mixed grass prairie communities occur throughout the project area in eastern Wyoming (MPs 265 to 318.5) and in northeastern Colorado (MPs 318.5 to 327.0).

Over half the plant cover in shortgrass prairie is comprised of two sod-forming species: blue grama and buffalo grass. Buffalo grass is considered the indicator species. Other common species include western wheatgrass, needlegrasses, prickly pear cactus, fringed sagewort, Indian ricegrass, and broom snakeweed. Mixed grass prairie is distinguished from the shortgrass prairie by having much higher floristic diversity and an absence of buffalo grass. Dominant species that occur include blue grama, bluebunch wheatgrass, Indian ricegrass, western wheatgrass, needlegrasses, Sandberg bluegrass, fringed sagewort, and prickly pear cactus.

TABLE 2.1.11-7

Entrega Gas Pipeline Project
Wyoming Mix 4 (WM#4)
Prairie Communities Seeding Mix

Species	Seeding Rate in Lbs/acre/PLS a/	
	Drilled	Broadcast
Western wheatgrass	4	8
Blue grama	2	4
Side-oats grama	2	4
Switchgrass	2	4
Lewis' flax	1	2

a/ Seeding mix may be modified based on site-specific conditions, identification of additional species for rapid site stabilization, species success in other restoration efforts, and seed availability. An alterative seeding rate may be used if the mixture is modified, if the BLM modifies the rate, or a landowner requests an alternative seeding rate.

Alternative species that may be used in this mix include needleandthread, Indian ricegrass, and scarlet globemallow.

2.1.12 Mulching

Entrega will apply clean, weed-free straw mulch to dry, sandy areas and areas with slopes exceeding 10 percent. In actively cultivated cropland and in areas where surface rock is greater than 4 inches in diameter and exceeds at least 20 percent surface coverage after rough grading, mulch will not be applied unless otherwise requested by the landowner. Mulch will be applied concurrent with or immediately after seeding, where necessary to stabilize the soil surface and to reduce wind and water erosion. Mulch will be uniformly spread over at least 75 percent of the ground surface in disturbed areas to minimize the effects of water and wind erosion and to preserve moisture in areas requiring vegetation. Mulch will be anchored by disking or punching, depending the percent slope.

Woody vegetation cleared from the ROW may be stored for use as mulch to be spread over the ROW following seeding and mulching, if required. A backhoe with a hydraulic thumb or equivalent apparatus operating on the edge of the ROW will randomly distribute woody vegetation across the restored ROW to create a visual barrier.

If final grading and installation of permanent erosion control measures are delayed and cannot be completed before the following spring, Entrega will apply mulch on slopes greater than 10 percent that contain less than 20 percent surface rock greater than 4 inches in diameter. Mulch will provide temporary erosion control until permanent erosion control measures can be installed.

2.2 Special Construction Mitigation and Reclamation Measures

Entrega will utilize special mitigation and reclamation measures in specific areas where use of general methods may be impractical, create unsafe working conditions, or where sensitive environmental resources are located. Special mitigation and reclamation measures will be used in areas of steep slope and erodible soils (Special Treatment A);

at waterbody, dry wash, and wetland crossing (Special Treatment B); visually sensitive areas (Special Treatment C); where the project is located near or within threatened and endangered and/or sensitive species habitat; and cultural and/or paleontological resource areas.

2.2.1 Steep Slopes and Erodible Soils – Special Treatment A

Steep slopes in excess of 20 percent and areas with unstable soils are common on the pipeline route, particularly between Meeker Hub and Wamsutter. There are approximately 46 of these areas along the route. They range in linear distance from 100-200 feet to upwards of 0.75 miles. When disturbed by construction, these areas may be susceptible to erosion if water from snowpack runoff and intense rainfall events is not controlled. In some instances, pipe sections required in these areas will be factory bent to facilitate installation. Table 2.2.1-1 lists these areas with approximate mileposts.

TABLE 2.2.1-1

Entrega Gas Pipeline Project
Special Treatment Area A

Beginning and Ending Mileposts		Feature/Terrain	Special Considerations
7.0	7.1	Steep Slope	None
12.4	12.9	Rock Outcropping/Steep Slope	Special Treatment C
15.4	15.6	Steep Slope	None
16.7	16.8	Steep Slope/Dry Gulch Crossing	None
18.3	18.5	Steep Slope	None
20.1	20.7	Steep Slope	None
21.3	21.4	Steep Slopes/Dry Gulch Crossing	None
22.4	22.6	Steep Slopes/Dry Gulch Crossing	None
32.7	23.8	Steep Slope	None
24.2	24.3	Steep Slope	None
24.9	25.1	Steep Slope	None
25.5	25.8	Several Steep Areas/Dry Gulch Crossing Special Treatment Area C	None
26.1	26.2	Steep Slope	None
26.6	26.7	Steep Slope	None
27.5	28.1	Several Steep Slope Crossings/Unstable Soils	None
29.7	29.75	Steep Slope/Unstable Soils	None
29.9	29.95	Steep Slope/Unstable Soils	None
33.2	33.5	Steep Slope	Special Treatment C
37.4	37.7	Steep Slope Entering Pine Tree Gulch	Special Treatment C
39.9	39.4	Steep Slope Existing Pine Tree Gulch	Special Treatment C
40.7	40.7	Steep Slope/Unstable Soils	None
53.9	54.2	Several Steep Slopes/Gulches	None
64.2	64.3	Several Steep Slopes	None
83.6	83.8	Steep Slopes/Unstable Soils	None
89.2	89.6	Several Steep Slopes/Dry Gulches	None
90.4	90.5	Steep Slopes	None
91.95	92.0	Steep Slope	None
93.1	93.8	Several Steep areas/Steep Side Slope Construction Required	None
95.9	96.7	Several Steep areas/Several Dry Gulches	Special Treatment B applies for some areas near Sand Creek
98.6	98.8	Several Steep areas/Several Dry Gulches	Special Treatment B applies some areas near Willow Creek
99.2	99.5	Several Steep Slopes	None
99.6	100.0	Several Steep Slopes	None

TABLE 2.2.1-1

Entrega Gas Pipeline Project
Special Treatment Area A

Beginning and Ending Mileposts		Feature/Terrain	Special Considerations
100.2	100.6	Several Steep Slopes	None
213.9	214.0	Steep Slope at Kinney Creek	None
225.9	226.0	Steep Slope	None
228.7	228.8	Steep Slope at Bear Creek	None
229.7	229.8	Steep Slope at Wagonhound Creek	None
236.7	237.0	Steep Slopes	Special Treatment C applies due to TCP
239.9	240.0	Moderately steep slope	Special Treatment B applies in some areas
244.2	244.3	Moderately Steep Slope	None
245.3	245.6	Moderately Steep Slope at wash crossing	None
305.0	305.1	Steep Slope	None
313.1	313.2	Moderately Steep Slope	None
313.8	314.0	Several Moderately Steep Slopes	None
315.3	315.6	Several Steep Slopes	None
316.0	316.1	Steep Slope /Dry Gulch	None

The Entrega Gas Pipeline route crosses approximately 23 gulches and washes where the slope exceeds 20 percent. In some cases, the walls of the washes can approach a nearly vertical incline in the pipeline right-of-way. Entrega attempted to route the pipeline to avoid nearly vertical walls. In some areas, the terrain in the alternative routes was equally difficult for construction relative to the original route.

Based on area-specific conditions, Entrega has identified the following measures that will be implemented to prevent slope failure:

Stockpiling

On steep slopes where topsoil, woody debris, and rock cannot be conventionally stockpiled at the edge of the construction ROW, the contractor will push the material to temporary use areas for use during restoration.

Temporary Slope Breakers

On steeply sloping land, temporary slope breakers will be installed after the ROW is graded. Temporary slope breakers will be spaced at intervals determined by the BLM Monitor or the EI. A temporary berm will be installed 10 to 30 feet from the crest of a slope to act as a reference point for spacing the remaining berms. Slope breakers will be inspected on a daily basis in areas of active construction; on a weekly basis in areas with no active construction; within 24 hours of each 0.5-inch or greater rainfall.

Temporary slope breakers may be omitted where the surface is predominately rock and the potential for erosion is minimal.

Trench Breakers

Trench breakers will be constructed at intervals determined by the BLM Monitor or EI where surface drainages parallel the trenchline. In addition, trench breakers will be installed at the base of steep slopes adjacent to waterbodies.

Recontouring and Slope Reduction

Special attention will be given to shaping the construction ROW to direct runoff into existing drainages off the ROW. Cut and fill slopes will have the slope reduced to 3:1 or 4:1 ratio or to match the adjacent utility ROW to aid in reclamation and stabilization. If necessary, energy dissipation devices may be installed at the bases of cut and fill slopes to prevent scour in adjacent steep banks not located in the construction ROW.

Permanent Diversion Berms

Permanent diversion berm will be installed near the top of a slope, typically within 10 to 30 feet of the crest of a slope, to act as a reference point for spacing the remaining berms. Spacing of the remaining berms will be determined by BLM Monitor or the EI.

Where the ground surface is naturally rocky and resistant to erosion, diversion berms may be omitted or the spacing increased at the discretion of the BLM Monitor or EI.

Mulch Crimping and Punching

Entrega will crimp or "punch" mulch into the topsoil. Crimping and punching involves two applications of 1 to 1.5 tons per acre of weed-free straw to an area. After the first application of mulch and seed is applied, the material will be crimped into the soil by hand, or with a disk, or "punched" into the surface with a footed roller pulled by a tractor. Following the first mulch application and seeding/fertilizing, a second layer of mulch will be applied and anchored.

Use of a nondirectional footed roller is the preferred method to anchor mulch. This device creates depressions in the soil surface, increases soil contact with the seed, and holds the soil in place. Punching reduces the potential for wind erosion and provides an environment conducive for moisture retention and germination. Punching will not be used in rocky areas.

If mulch is crimped into the surface by a disk, the crimping pattern will be cross hatched to prevent the creation of down slope furrows that could channelize runoff. Mulch will not be crimped in rocky areas.

Erosion control fabrics (*i.e.*, jute matting, straw blankets with plastic netting, or curlex) will be substituted for straw mulch on steep, unstable slopes where mulch cannot be applied by mechanical means because of safety concerns. Fabric should overlap by 4 to 6 inches and be stapled or staked into the soil.

Rock Mulch

Rock mulch will be used to control erosion in areas that have a native gravel, cobble, boulder, or bedrock surface. Rock salvaged and stockpiled from these areas during construction will be distributed over the construction ROW during restoration and seeded with broadcast seeder. The gaps in the rocks will provide a micro environment beneficial to seed germination by allowing moisture to collect and provide protection from wind. A rock cover will also blend the construction ROW into undisturbed areas.

2.3 Waterbodies, Dry Washes, and Wetlands – Special Treatment B

Entrega will implement special mitigation and reclamation treatments to stabilize the streambed and banks, replace riparian and wetland vegetation, minimize discharge of sediment into the waterbodies, and prevent pipeline exposure from streambed scour.

The waterbody table in appendix A lists the proposed construction methods that were identified by Entrega based on site-specific conditions, and stream crossing techniques are described in 6.3, Section 1.

Entrega has developed site-specific waterbody crossing plans for the White River (MP 15.7), Yampa River (MP 51.0), Little Snake River (MP 85.1), North Platte River (MP 193), Medicine Bow River (MP 225.5), and Rock Creek (MP 237.4). These waterbodies have water's-edge-to-water's-edge width greater than 100 feet. The site-specific plans are located in the appendix A.

Bridging

No construction equipment will be allowed to ford perennial waterbodies. Temporary construction bridges, span or supported, will be installed over perennial waterbodies during the clearing operation and will remain in place until final restoration has been completed. Temporary equipment bridges will be constructed in accordance with typical figures, and designed to accommodate high stream events (see appendix A for Entrega's environmental alignment sheets for bridge locations and dimensions). Bridge decks will be kept free of soil. Bridges are not required on dry washes.

Equipment bridges will consist of one of the following: clean rock placed over flume pipes; prefabricated construction mats; rail flat cars placed over the waterbody with or without a culvert; or flexi-float or other temporary bridging, such as Bailey bridges.

Equipment that is not associated with clearing crews, or trenching in waterbodies, will cross perennial waterbodies with state-designated fisheries using a temporary bridge as described above. Washes may be crossed with equipment without the use of a temporary bridge. Temporary bridges and associated material will be removed after final restoration of the ROW.

Clearing and Grading

Clearing and grading of work areas will be confined to the construction ROW. The width of surface disturbance will be kept to the minimum required for safe and efficient construction.

If blading is not required to level the ROW to create a safe working area, Entrega will mow or crush areas of small woody vegetation and herbaceous vegetation and leave the root systems intact.

Cuttings and Rootings

Where required by FERC, BLM, or COE permit conditions, tree cuttings, containerized plants, or transplants, will be used to restore woody plant communities, stabilize riparian areas, and provide a visual screens to conceal the ROW. Species include willow,

cottonwood, and aspen. Willow species will be planted as non-rooted cuttings; and cottonwood as rooted cuttings. Tree cuttings will be obtained from adjacent areas within the surveyed corridor that were identified and approved by the land-management agency. Locally obtained tree cuttings will be used to ensure that plants are adaptable to the environment.

Tree cuttings will be between 16 and 24 inches long and obtained during the dormant season (February to May) and planted within two weeks of cutting, or stored under refrigeration, until needed.

Willow and aspen cuttings will be spaced with an average of 10 feet/center (for example: an area 50-feet by 100-feet will require 50 trees set at 10-foot spacings). Cottonwoods will be spaced at 15 feet/center. Plantings will be randomly placed to promote a natural distribution, but the recommended average plant density will be maintained. Species will not be planted within 10 feet either side of the pipeline.

Tree cuttings will be inserted into the ground approximately 6 inches and will be covered with a fine plastic netting to deter browsing.

In Wyoming, at the Medicine Bow River and Rock Creek crossings, the ROW will be reduced down to 75 feet in areas were large stands of willow trees are present. This will facilitate a visual barrier at the crossing of these waterbodies.

At the Medicine Bow River, approximately 143 trees would require removal from the ROW. They range in diameter from 8-inches to 48-inches with a mean diameter of 18-inches. Rock Creek will require the removal of substantially few trees which are generally smaller in diameter. The dominant species at this crossing are comprised of cottonwood brush.

Sediment Control

Silt fence, or equivalent, will be installed and anchored along the banks of waterbodies. Sediment control devices will be maintained until revegetation of adjacent areas is considered successful or the area is stabilized. Permanent diversion berms will be constructed at the base of slopes near waterbodies, unless otherwise specified by the land-managing agency or the EI.

Trench Breakers

Sand bags or foam plugs breakers will be installed in the pipeline trench adjacent to waterbodies and wetlands, or at locations specified by the EI.

Trench Dewatering

If trench dewatering is necessary in wetlands, silt-laden trench water will be discharged into an energy dissipation/sediment filtration device, such as a geotextile filter bag or straw bale structure, to minimize the potential for erosion and sedimentation.

Where trench dewatering is required prior to pipeline lowering in, padding, or tying in, the trench will be dewatered by pumping from the trench at a controlled rate into a

dewatering structure to prevent erosion and minimize sedimentation of surface water. Trench water may not be pumped directly into wetlands or waterbodies.

Pipeline Burial Depth

The pipeline will be installed at a minimum depth of five feet below the bed of washes to prevent exposure of the pipeline and maintain the integrity of the system in event of a flash flood. The pipeline will be buried at a minimum depth of three feet below the surface in wetlands.

Backfill Material

Excavated material will be used for trench backfill in perennial streams and dry washes, unless expressly permitted otherwise by the BLM, COE, or state regulatory agency. Backfilling will begin as soon as practical after installation of the pipe and reestablishment of the streambanks.

If blasting is required for installation in a waterbody, the trench will be backfilled with native rock that was removed during blasting activities.

Streambed and Bank Stabilization

Original channel configurations will be reestablished, and the banks replaced, compacted, and restored to the original condition. Banks may be graded to a more stable configuration if eroding or unstable conditions were present prior to construction.

If rock cover or root stock is insufficient, riprap will be applied to the banks of the washes and waterbodies. Riprap will be acquired from trees removed in nearby areas of the Entrega ROW. In the event that external wood sources are required, Entrega will only utilize native tree species. Riprap will be placed from the channel bottom to the top of the normal high water line on the banks for erosion control. Stream bottom material will be replaced in perennial waterbodies so that the substrate composition approximates original conditions. The size of the riprap will be approved by the BLM or identified in COE permit conditions. The upper area of the riprap will be covered with soil and seeded.

To provide additional erosion control, Entrega will use erosion control blankets (*e.g.*, jute matting, straw blankets with plastic netting, or curlex) on the banks of washes and waterbodies where a minimum of natural rock is present. The use of erosion control fabric on waterbodies and washes in BLM-managed land will require approval of the Authorized Officer.

If required, Entrega will install temporary fences at the edges of waterbodies and wetlands to prevent grazing cattle from disturbing the area before a mature vegetative cover is established.

Seeding

The banks of perennial streams will be seeded with mixes listed in 2.1.11 Section 2. Dry washes and wetlands will not be seeded.

2.4 Visually Sensitive Areas – Special Treatment Area C

Public lands that will be affected by the proposed pipeline are comprised mostly of lands managed by the BLM. The BLM has an RMP for each resource area that will be crossed by the proposed pipeline route and each RMP includes a visual resource management (VRM) standard. Therefore, BLM-owned public lands are managed in a manner that will maintain the quality of scenic and visual resources. VRM classes are assigned to the various landscapes in each of the BLM's' resource areas.

The BLM VRM classes range from class I to class V, with class I being the most restrictive and class V being the least restrictive. In general, the proposed Entrega Gas Pipeline route will cross lands designated as class III or class IV. The class III designation applies entirely to the BLM-managed lands in the White River Resource Area and to the majority of the BLM-managed lands within the Rawlins Resource Area. A class III designation allows for changes in the visual landscape caused by a management activity, but should remain an insignificant portion of the visual strength of the existing landscape. New land disturbing activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic visual elements found in the predominant natural features of the preconstruction landscape.

The area that will be crossed by the proposed pipeline route along U.S. Interstate 80 to the west of Rawlins, Wyoming (about MP 135.0 to MP 172.5) has been designated by the BLM as a VRM class IV. Lands under the VRM class IV designation are currently dominated by land disturbing structures and activities that repeat the form, line, color, and texture of the characteristic landscape. New land disturbing activities should not be comprised of facilities or changes to the landscape that will create a new, visually dominant feature.

Entrega developed milepost-specific reclamation methods to mitigate construction impacts on the landscape. The treatments vary depending on the terrain, native vegetation type, and recommendations from land and resource management agencies.

Visually important areas that will be crossed by the pipeline project include the rock outcropping at approximate MP 12.4, and the north-facing slopes at MPs 13.4 and 39.4, and Kennetech Windfarm at MP 237. These areas are readily visible from roads and highways. The project crosses a designated Traditional Cultural Property (TCP) located near several existing pipelines and the Kennetech Wind Farm. The area is visible for miles from Interstate-80.

2.4.1 Construction Mitigation and Reclamation Measures

In addition to the conditions described in tables 2.4.1-1, 2.4.1-2, and 2.4.1-3, construction procedures outlined in Special Treatment A will be followed to minimize impacts on visually sensitive areas.

TABLE 2.4.1-1

Entrega Gas Pipeline Project
Visual Character and Mitigation by Landscape Unit
MPs 13.0-13.4

Landscape Unit:	Piceance Basin
Notable Viewpoints:	Hillside is visible for miles, including locations on County Road 5 and Highway 64.

TABLE 2.4.1-1 **Entrega Gas Pipeline Project** **Visual Character and Mitigation by Landscape Unit** **MPs 13.0-13.4**	
Ownership:	Colorado DNR-DOW and BLM; included in the Piceance Creek State Wildlife Area.
VRM Class:	Class III
Previous disturbance:	Uinta Basin Lateral (CIG) installed in 1991.
Description:	Entrega would create a new pipeline corridor on the north-facing slope on a visible hillside. Uinta Basin Lateral right-of-way is visible on the west side, and Entrega's right-of-way would add a second corridor on the face of the hillside.
Visual Impact:	The visual impact would be moderate because the corridor would be visible for miles and could be seen from Highway 64.
Mitigation:	• The ROW width at MP 13.0 cannot be reduced to less than 100 feet on the north-facing slope adjacent to Piceance Creek due to the steepness of the terrain. Entrega does not feel that it can adhere to the standards of its Health & Safety Plan by reducing workspace. • Salvaged woody debris and rock will be randomly scattered over the ROW after seeding to blend the pipeline corridor into the surrounding landscape.

TABLE 2.4.1-2 **Entrega Gas Pipeline Project** **Visual Character and Mitigation by Landscape Unit** **MPs 39.1-39.4**	
Landscape Unit:	Pine Tree Gulch
Notable Viewpoints:	Hillside is visible for miles, including locations on County Road 57.
Ownership:	Private
VRM Class:	Class III
Previous disturbance:	None
Description:	Entrega would create a new pipeline corridor on the north-facing slope on a visible hillside adjacent to Pine Tree Gulch. There has been no previous surface disturbance to the hill.
Visual Impact:	The visual impact would be moderate because the corridor would be visible for miles and could be seen from County Road 57.
Mitigation:	• The ROW width between MPs 39.1 and 39.4 cannot be reduced to less than 100 feet due to the steepness of the terrain. Entrega does not feel that it can adhere to the standards of its Health & Safety Plan by reducing workspace. • Photographs of the ROW and rock outcropping will be taken prior to construction and used for reference during restoration. • Rocks salvaged from the rock outcropping will be replaced at the same elevation as the rock outcropping to form a continuous band of rocks across the ROW. • Entrega will increase brush species in the seed mix to facilitate better post-construction screening. • Division berms will be placed across the top of the slope above the rocks. • Mulch will be tacified to prevent excessive water or wind erosion of topsoil. Monitor the revegetation of feature using methods outlined in section 3.4.

TABLE 2.4.1-3

Entrega Gas Pipeline Project
Visual Character and Mitigation by Landscape Unit
MPs 236.7 - 237.0

Landscape Unit:	Arlington, flat plateau
Notable Viewpoints:	Hillsides and plateau are visible for miles, including locations on Interstate-80.
Ownership:	Bear Creek Cattle Company Leland D. Brokaw
VRM Class:	Class III
Previous disturbance:	Several natural gas pipelines Fiber optic lines Kennetech Windpower Project
Description:	Entrega would add a new pipeline corridor adjacent (south side) of the existing Wyoming Interstate Gas pipeline corridor.
Visual Impact:	The visual impact would be moderate because the corridor would be visible for miles and could be seen from Interstate-80.
Mitigation:	• The construction ROW width will be reduced to 75 feet across the top of the plateau to minimize disturbance. • A required TUA was shifted to avoid known cultural resource sites within the project area. • An archaeological monitor will be present during construction. If required, site boundaries will be isolated with exclusion fencing during all construction activities. • No aboveground facilities will be located on the plateau.

Other Site Specific Restoration

At several locations along the pipeline where unpaved BLM, county, or private roads are crossed, Entrega may stockpile natural debris (*i.e.* rocks, tree stumps) along the ROW near the road edge to discourage public use of the newly created ROW or inadvertently cause the creation of new roads.

At MP 12.4, rocks removed from the ROW will be replaced and blended into the remaining rock outcropping to present the most natural look possible. The dry wash channel to the east will be recontoured to as near original condition as possible.

2.5 Threatened and Endangered Species, Sensitive Species, and Sensitive Habitats

Entrega consulted with the USFWS and the BLM Field Offices regarding the presence of federally listed endangered, threatened, proposed and candidate species, BLM-listed sensitive species, and sensitive wildlife habitats in the vicinity of the proposed Entrega Gas Pipeline. Proposed measures to minimize disturbances to the identified species and habitats are included below.

2.5.1 Federally Listed or Proposed Threatened and Endangered Species

Entrega developed a Conservation Measure Plan that includes measures to be implemented if federally listed species or species of concern are identified along the proposed pipeline route during project-specific surveys. The plan includes measures for all species based on the assumption that surveys will confirm presence of each species along the proposed pipeline route. Developed through coordination with the USFWS, the Conservation Measure Plan includes the appropriate measures to avoid or minimize impacts on protected species and the measures have been included as part of the proposed project. Implementation of these measures will avoid or minimize impacts on federally listed species such that the proposed project is not likely to adversely affect these species. The USFWS has provided comments to Entrega's first draft of the Conservation Measure Plan, and the plan was filed as a part of Entrega's FERC Application on September 17, 2004.

2.5.2 BLM Listed Sensitive Species

Entrega developed a BLM Conservation Measure Plan that includes measures to be implemented if BLM sensitive species are identified along the proposed pipeline route during project-specific surveys. The plan includes measures for all species based on the assumption that surveys will confirm the presence of each species along the proposed pipeline route. Developed through coordination with the BLM, the BLM Conservation Measure Plan includes the appropriate measures to avoid or minimize impacts on sensitive species and the measures have been included as part of the proposed project. Implementation of these measures will avoid or minimize impacts on sensitive species such that the proposed project is not likely to result in a loss of viability, nor cause a trend to Federal listing or a loss of species viability rangewide. The BLM Field Offices have provided comments to Entrega's first draft of the BLM Conservation Measure Plan, and the plan was filed as a part of Entrega's FERC Application on September 17, 2004.

2.5.3 Sensitive Wildlife Habitats

Sensitive wildlife habitats assessed during agency review of the project included big game winter range, sage grouse leks, Colorado pikeminnow critical habitat, mountain plover nesting habitat, raptor nests, and T&E species habitats. Mitigation measures recommended by BLM and USFWS resource specialists are included below.

Big Game Ranges

Crucial winter and winter/yearlong big game ranges for elk, pronghorn, and mule deer occur throughout the project area (Section 1, 4.3.3). Entrega will mitigate disturbance to these crucial big game ranges by avoiding construction activities within these habitats between November 15 and April 30 in Wyoming and between December 1 and April 30 in Colorado, as recommended by the Wyoming Game and Fish Department and the Colorado Division of Wildlife, respectively. The pipeline construction ROW will not create a permanent barrier to migrations. The disturbed area will be reclaimed immediately using revegetation and restoration measures specified in this plan.

To avoid disturbances to crucial winter and crucial winter/yearlong ranges during operation of the pipeline, operations and maintenance activities will also be scheduled outside of the November 15 to April 30 time window in Wyoming and the December 1 to

April 30 time window in Colorado. Construction time windows will be adhered to and are included on the construction alignment sheets.

Sage Grouse Leks

Habitat for sage grouse leks occurs within the proposed project area. Full surveys to determine the locations of active leks will be conducted during the year of construction in accordance with Entrega's Survey Plan. The following conservation measures will be implemented based on the location of the active leks identified during the surveys in relation to the project area:

- For an active lek identified by the surveys within 0.25 mile of the construction right-of-way, Entrega will minimize impacts on the lek and associated nesting habitat by beginning construction after June 30, or as otherwise permitted by the appropriate resource agency. In addition, Entrega will minimize impacts on the lek by reducing the width of the right-of-way through the lek as practical and avoiding permanent surface development within the lek.
- For suitable nesting habitat associated with an active lek identified by the surveys within 2 miles of the proposed project area, Entrega will minimize direct impacts on the nesting habitat by beginning construction after June 30 and reducing the width of the right-of-way as practical, unless otherwise permitted by the appropriate resource agency.
- For suitable brood-rearing habitat associated with an active lek identified by the surveys within 2 miles of the proposed project area, Entrega will minimize direct impacts on the brood-rearing habitat by beginning construction after July 15 and reducing the width of the right-of-way as practical, unless otherwise permitted by the appropriate resource agency.

Following construction, the project area will be restored to preconstruction contours and areas of suitable habitat will be restored by broadcast seeding with a seed mix that includes native species and is acceptable to the landowner, local NRCS office, or other applicable agencies.

Additionally, Entrega will avoid disturbance to sage grouse wintering habitat by scheduling pipeline construction and maintenance activities outside of the sensitive period of March 1 through May 31.

Colorado Pikeminnow Critical Habitat

Designated critical habitat for the Colorado pikeminnow occurs within the proposed project area along the White and Yampa Rivers. Entrega proposes to cross the White and Yampa Rivers using the horizontal directional drill (HDD) crossing method, which will eliminate most potential impacts on Colorado pikeminnow that may occur at those crossing locaitons.

Entrega will minimize the potential for an accidental spill or discharge of any chemical or petroleum product into surrounding watershed systems by implementing its SPCC Plan. Additionally, in accordance with Entrega's Plan and Procedures, construction equipment fueling and servicing areas will be located at least 100 feet from surface waters and riparian zones and away from slopes that lead to those zones.

Entrega's site-specific crossing plans for the Yampa and White Rivers are located in Appendix A.

Mountain Plover Nesting Habitat

Suitable habitat for the mountain plover could occur in the project area between MPs 95.0 and 327.0. A field survey for mountain plover nests will be conducted in accordance with the BLM Survey Plan in these areas of suitable habitat. If an active mountain plover nest is found, the nest location will be recorded and reassessed immediately before construction if construction is expected to occur between April 10 and July 10. If the nest is still active at that time, construction equipment will be prohibited from working within 0.25 mile of the nest until the young have fledged. If a plover family group is identified during surveys or immediately before construction, the group will be monitored by a biologist to determine its use pattern. The area being used by the family group will be marked with signs designating the area as sensitive if the group does not move at least 200 meters from the centerline. Construction equipment will be allowed a one-time pass through the area with the biologist present to monitor plover location and response. Following construction, the project area will be restored to preconstruction conditions.

Raptor Nests

As detailed in the BLM Survey Plan, Entrega intends to conduct additional raptor nest surveys between April 21 and May 15, 2005, prior to construction. Entrega will adhere to the appropriate measures to protect active nest sites identified during the aerial surveys, such as adhering to spatial buffers and seasonal constraints as presented in Section 1 (table 4.3.3-4), unless otherwise permitted by the applicable agencies as determined on a site (nest)-specific basis. Appropriate protection measures will depend on site-specific variables (*e.g.*, species, nest location, topography, breeding phenology, vegetation).

2.6 Cultural Resources

2.6.1 Archaeological Resources

Cultural resources potentially impacted by this project will be protected as described in the BLM stipulations attached to the Grant and/or Notice(s) to Proceed. Data recovery and documentation will be completed on all identified sites, including excavation and monitoring the trench in designated areas, per the stipulations. For site avoidance, temporary barriers will be erected where required between the cultural resource sites and construction activity prior to the start of construction. The barrier will be upright wooden survey laths spaced no more than ten feet apart and marked with flagging, paint, or other distinctive markings. A permitted archaeological monitor and/or BLM archaeologists will direct temporary barrier placement as required by the stipulations issued with the ROW Grant.

Cultural resources will be protected during construction, operation, and maintenance procedures. In Colorado, Entrega will require a qualified archaeological monitor to be present for all phases of construction to monitor trenching and other ground disturbing activities. In Wyoming, Entrega will require a qualified archaeological monitor in areas where sensitive cultural resources are present or the potential for eligible resources exists (*i.e.* sensitive landforms). Additionally, cultural resource sensitivity training will be

incorporated into Entrega's Environmental Training Program and morning tailgate meetings for construction personnel.

Three levels of practice will apply to the construction spreads:

1. Construction in areas where monitoring for cultural resources is not being performed.

   If an operator discovers any previously unidentified historic or prehistoric cultural resources during operation, then work in the vicinity of the discovery will be suspended and the discovery will be promptly reported to the BLM Authorized Officer. The discovery will be protected and kept intact until the Authorized Officer specifies what action will be implemented. The Authorized Officer or a permitted cultural resources consultant may perform minor recordation, stabilization, or data recovery. If warranted, BLM may require Entrega to conduct a more extensive treatment by a permitted cultural resources consultant before the project is allowed to resume. Further damage to significant cultural resources will be prohibited until any required treatment is completed. Failure to notify the BLM about a discovery may result in civil or criminal penalties in accordance with the Archeological Resources Protection Act of 1979 (as amended).

2. Construction in areas where monitoring for cultural resources is being performed.

   If monitoring confirms the presence of previously unidentified cultural resources, then work in the vicinity of the discovery will be suspended and the monitor will promptly report the discovery to the BLM Authorized Officer. The discovery should be protected and kept dry until treatment is completed. The Authorized Officer will specify what action is to be taken. A permitted cultural resources consultant may perform minor recordation, stabilization, or data recovery. If warranted, more extensive treatment by a permitted cultural resources consultant may be required of Entrega before the project is allowed to resume. Further damage to significant cultural resources will be prohibited until any required treatment is completed.

3. Damage to a previously identified site.

   If, in its operations, Entrega's contractor damages, or is found to have damaged any previously documented or undocumented historic or prehistoric cultural resources, excluding "discoveries" as noted above, Entrega agrees to have a permitted cultural resources consultant prepare and have executed a BLM approved data recovery plan. Damage to cultural resources may result in civil or criminal penalties in accordance with the Archeological Resources Protection Act of 1979 (as amended).

If Entrega's contractor discovers human remains in connection with a project activity, the person must cease the activity in the area of discovery, make a reasonable effort to protect the items discovered, and provide notice to the EI. Treatment will be required of Entrega before construction is allowed to resume. This procedure is detailed in Entrega's Plan for the Unanticipated Discovery of Human Remains or Historic Properties.

If cultural monitoring is required, a copy of the BLM grant stipulations will be supplied to the archaeological monitor prior to BLM issuing a Notice to Proceed. No construction activities, including vegetation removal, may begin before the arrival of the monitor.

Construction in these areas will not occur when the ground is covered in snow or during heavy rain. The monitor will submit a report of the monitoring activities within 30 days of completion of monitoring unless other arrangements are made with the BLM.

2.6.2 Paleontological Resources

Construction of the project will involve several fossil-bearing rock formations. Due to the geographic distribution of these formations Entrega has prepared a Paleontological Mitigation and Monitoring Plan to fulfill the requirements of FERC and BLM regarding the protection of significant paleontological resources. The mitigation plan includes construction personnel training and spot monitoring of areas with a potential for fossils.

The paleontological resource mitigation plan includes:

- Paleontological training. During environmental training, construction personnel will be provided instruction on compliance procedures if fossil resources are observed during earth-moving activities (*i.e.*, grading, trenching, or blasting).
- Responsibilities of a paleontological monitor(s). The monitor(s) will assess the number and significance of specimens excavated to disturbed by earth-moving equipment.
- Site-specific mitigation measures identified by mileposts.
- Curation and reporting.

Sensitive and known paleontological resources will be fenced off along the ROW, and a qualified paleontological monitor will be present during construction at appropriate locations in Colorado and Wyoming..

3.0 RECLAMATION MONITORING PLAN

3.1 Goals of Reclamation Monitoring

To assess the effectiveness of the reclamation treatments and to evaluate the condition of ROW, Entrega will implement a monitoring program consisting of field inspections and vegetative analysis. A report of the condition of the ROW and the status of sensitive resources affected during construction will be submitted to FERC and BLM. The monitoring program will also identify remedial measures that will be considered by Entrega to mitigate environmental degradation if the initial treatments were not effective in achieving the objectives of the reclamation program.

3.2 Reclamation Performance Criteria

Entrega's effort to reclaim areas disturbed during construction will be evaluated over a period of five years. Successful reclamation performance will be based on revegetation success (*e.g.*, cover and diversity), the absence of weeds or invasive plants, stability of the construction ROW, waterbody bed and bank stability; and visual aesthetics.

3.3 Monitoring Techniques and Procedures

To evaluate the success of revegetation, Entrega will use a quantitative rapid diversity assessment. This is an effective and efficient technique to monitor the composition of

vegetative cover and diversity over time and between sampling plots. The technique is useful to measure the response of vegetation to disturbance.

In association with a vegetative monitoring program, Entrega will assess the success of reclamation efforts to stabilize soil and waterbodies.

3.3.1 Vegetation Monitoring

Entrega will monitor quadrants (*i.e.,* rectangular analytical plots identified in the field and retrievable by GIS equipment) located in the ROW, and control quadrants located outside the ROW. Monitoring will occur in July during the first, third, and fifth years following reclamation. Plant diversity and percent cover data will be collected. Data obtained from the reclaimed ROW will be compared to vegetative data obtained from the undisturbed, naturally-occurring vegetative populations adjacent to the ROW. Variation between plots will provide a quantitative indication of the relative success of reclamation. Section 3.4.1 describes the number and location of the plots that will be assessed.

In areas where plantings/transplanting occurred, reclamation success will be based on survivorship and vigor of the transplants.

3.3.2 Erosion and Runoff Control

Periodic ground and aerial inspections of the route by Entrega Gas Pipeline Operations and Maintenance (O&M) personnel should detect areas of erosion (*i.e.*, formation of gullies, deposition of sediment) and uncontrolled runoff (*i.e.,* berm washouts) before significant impacts occur. In addition to O&M reconnaissance, reclamation specialists will conduct annual inspections during July of first, third, and fifth years following reclamation to assess the condition of the ROW and the effectiveness erosion control measures. This ground inspection will concentrate on steep slopes, erodible soils, and sensitive areas identified during construction by the EIs and agency representatives.

3.3.3 Waterbody Stabilization

In association with erosion control and runoff inspections, Entrega representatives will visually assess the condition of bed and bank stabilization measures installed during restoration at high quality streams. This assessment will occur with the same frequency of the erosion and runoff control inspections. High water-quality streams will be identified by Colorado and Wyoming Game and Fish personnel and BLM resource specialists during consultations. In addition, a limited number of dry washes that drain into high quality streams will also be assessed for bed and bank stability.

3.4 Monitoring Methods and Procedures

3.4.1 Vegetation Quadrants

Entrega will survey plots to determine the vegetative diversity, density, and percent cover on the ROW, TUA and in off ROW areas following restoration. The monitoring program will meet FERC's post construction monitoring requirements listed in Section VIII.A.3 of the Plan, which reads "Revegetation shall be considered successful if upon visual survey the density and cover of non-nuisance vegetation (or crops in cultivated crop land) are similar in density and cover to adjacent undisturbed lands". Entrega will

consider long term revegetation to be successful if approximately 80% of the proposed vegetative communities are reestablished in disturbed areas. In addition, vegetative monitoring will determine if, or to what extent, noxious weeds have become established in the project areas.

Entrega will use two teams for surveys, and conduct the program in July for three years following construction. The teams will consist of a vegetative specialist and a weed expert. Entrega will obtain landowner permission prior to conducting surveys.

Entrega will assess the vegetative diversity and percent cover in sampling quadrants to assess revegetation. Entrega will monitor 50 quadrants, of which, 25 quadrants will be located in the ROW, and 25 in adjacent, undisturbed areas off the ROW. The number of quadrants per vegetative community will reflect the percentage of each community crossed by the pipeline route. Entrega will consult with the BLM prior initiating the program, to determine appropriate locations.

The sampling quadrants will be paired: one quadrant will be located on the construction ROW and a second quadrant will be located off the ROW in an undisturbed area (*i.e.,* control plot). The control quadrant will be located in proximity to ROW quadrant. Quadrant size will vary by vegetative community:

- In the Grassland-Sagebrush Shrub areas: 44 quadrants (22 in the ROW and 22 in undisturbed areas) measuring 3 meters square will be assessed; and,
- In the Juniper Woodland/Pinyon Juniper Woodland areas, six quadrants (three in the ROW and three in undisturbed areas) measuring 5 meters square will be assessed.

Within the quadrants, the monitors will determine the diversity of the cover by recording the number of native and invasive species present. Vegetative assessment in the Juniper Woodland/Pinyon Pine Woodland areas will be limited to the herbaceous understory (*e.g.*, mature, woody species will be omitted).

Diversity will be indicated by the number and species of plants counted in each quadrant. Foliar cover will be estimated. "Cover" is defined as the area of ground covered by vertical projection of the aerial portions of plants. Foliar cover will be recorded in 10 percent increments, (*i.e.,* 10, 20, 30 percent, etc.). For example, foliar cover of 10 percent will mean that 90 percent of the quadrant consists of exposed litter, rock, and other surface debris, and 10 percent is covered with living, foliar vegetation.

Comparing the data from sample year to sample year will provide Entrega with an indication if: cover is increasing, if the species composition and diversity of the vegetation is expanding or contracting from one area to another, and if noxious weeds have been established in the ROW.

The geographic location of quadrants will be collected and stored using hand-held, sub-meter accuracy global positioning system (GPS) equipment. Location and size of the quadrants will be recorded using area polygons. These data can easily be transferred from the GPS equipment to either a CAD or GIS software application for use on project maps or alignment sheets. Entrega will also permanently identify the four corners of the quadrants with 1x2-inch wooded or metal stakes embedded into the ground so that a 4-inch section of the stake is visible for future reference.

Entrega will also monitor the survival, vigor, and success of transplants in riparian areas. This assessment will include a count of living transplants and invasive species. These data will be compared to the number of trees transplanted during restoration.

Entrega will monitor vegetative cover and the presence of noxious weeds in the ROW for three years following construction. Measured values for native vegetation will be compared to the minimum success standards for each year in a summary report that will be submitted to the BLM and FERC.

If required, Entrega will implement an additional revegetation and/or noxious weed control program in areas where monitoring has determined that additional measures would likely be successful.

3.4.2 Erosion and Runoff Control

Entrega will selectively survey areas that are susceptible to erosion (*i.e.,* step slopes and erodible soils) for three years following restoration. The surveys will be conducted in June or July and will involve a visual inspection of steep slopes, erodible soils, and other erosion sensitive areas identified by EIs, and agency personnel during construction. This survey will assess the condition of the ROW, TUAs, and access roads, the effectiveness of the erosion control devices, and recommend repair or maintenance procedures that are necessary to meet reclamation objectives. Entrega will survey approximately 35 sites. Entrega will obtain landowner permission prior to conducting surveys. The inspection sites will range from 200 to 1,000 feet in length.

Entrega will use teams consisting of a soil scientist and a vegetation specialist for the survey. The teams will complete an Erosion and Runoff Control Inspection Form for each site visit. Photographic documentation will accompany the inspection report.

Survey teams will notify Entrega O&M personnel if areas of the ROW require immediate stabilization and repair to meet the reclamation objectives. O&M personnel will attempt to respond to a repair request within 48 hours of notification.

3.4.3 Waterbody Stabilization

Entrega will survey high-quality waterbodies, and dry washes that drain into high-quality streams for three years following restoration. This visual assessment will evaluate the stability of the waterbody, condition of permanent erosion and sediment control measures, and the condition of the streambed and banks. Surveys will be conducted in July and August, and will involve two teams, each consisting of reclamation specialists. Entrega will obtain landowner permission prior to conducting surveys. The teams will use a Waterbody Stabilization Inspection Report Form. Photographic documentation will accompany the inspection report.

Entrega anticipates that inspection effort will require two weeks of field work to complete. During the surveys teams will notify O&M personnel if any stream or dry wash require stabilization and repair to meet the reclamation objectives. O&M personnel will attempt to respond to a repair request within 48 hours of notification.

3.5 Reclamation Monitoring Reports

Entrega will prepare an annual Reclamation Monitoring Report and submit this report to the BLM on or before December 31 of the inspection year. These reports will include:

Vegetation

- A summary of the general vegetative cover and diversity between the ROW and the comparison with off ROW vegetation quadrants;
- An assessment of the condition of transplants in riparian areas;
- Identification of areas that require remedial action;
- Recommendations and schedule for remedial action(s); and,
- Monitoring forms.

Erosion and Water Control

- Summary description of the condition of the ROW;
- Identification and description of problem areas;
- Recommendations and schedule for remedial action (s); and
- Erosion and Runoff Control Inspection Forms.

Waterbody Stabilization

- Summary description of the condition and stability of high-quality waterbodies and associated washes;
- Identification and description of problem areas;
- Recommendations and schedule for remedial action (s); and
- Waterbody Stabilization Inspection Report Forms.

3.6 Remedial Action

Entrega will consult with the BLM Project Manager prior to initiating remedial actions. This consultation will establish a work schedule; prioritize the list of actions to be taken; identify the equipment required; and describe mitigative measures that will be implemented.

APPENDIX D

ENTREGA'S WEED MANAGEMENT PLAN
REV. 3 JANUARY 2005

THIS APPENDIX DOES NOT INCLUDE ANY ATTACHMENTS THAT ARE REFERENCED IN THE PLAN

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2-1 Noxious and Invasive Weed Species and Existing Populations

Attachment List

A. State Laws Regarding Noxious Weeds

B. Agency Correspondence

C. Rio Blanco Land Use Resolution

1.0 INTRODUCTION

Noxious and invasive weed control practices for the Entrega Gas Pipeline Project described in the Weed Management Plan (Plan) plan have been developed in consultation with the following Bureau of Land Management (BLM) Field Offices:

- White River, Colorado
- Little Snake, Colorado
- Rawlins, Wyoming

Additionally, Entrega Pipeline Company Inc. (Entrega) consulted with the County Weed and Pest Districts and Weed Control Supervisors for the following counties:

- Rio Blanco, Colorado
- Moffat, Colorado
- Sweetwater, Wyoming
- Carbon, Wyoming
- Albany, Wyoming
- Laramie, Wyoming
- Larimer, Colorado
- Weld, Colorado

1.1 Plan Purpose

The purpose of this Plan is to prescribe methods to prevent and control the spread of noxious and invasive weeds during and following construction of the Entrega Gas Pipeline Project. Entrega and its Contractors will be responsible for implementing the methods described in this Plan.

This Plan is applicable to the construction and operation of the proposed pipeline facilities, including the pipeline right-of-way, the proposed compressor stations, the meter stations, areas of extra temporary workspaces, and any other areas disturbed during the construction and operation of the proposed facilities.

1.2 Goals and Objectives

The goal of Entrega's Weed Management Plan is to implement preventative measures to minimize the potential of establishment and spread of noxious and invasive weed infestations during the construction of the proposed facilities.

Legally, a noxious weed is any plant officially designated by a federal, state, or county government as injurious to public health, agriculture, recreation, wildlife, or property (Sheley, Petroff, and Borman,1999). A noxious weed is also commonly defined as a plant that grows out of place (*i.e.,* a rose can be a weed in a wheat field) and is "competitive, persistent, and pernicious." (James, *et al.,* 1991). Noxious weeds are officially designated as unwanted or

undesirable. Noxious weeds are opportunistic plant species that readily flourish in disturbed areas, thereby preventing native plant species from establishing successive communities.

An "invasive species" is defined as a species that is non-native (or alien) to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health. Invasive plants include not only noxious weeds, but also other plants that are not native to this country. The BLM considers plants invasive if they have been introduced into an environment where they did not evolve. As a result, they usually have no natural enemies to limit their reproduction and spread (Westbrooks, 1998).

1.3 Project Description

The proposed project includes the construction and operation of a buried 42- and 36-inch-diameter natural gas pipeline and ancillary facilities designed to transport natural gas from the Meeker Hub in western Colorado, north to Wamsutter, Wyoming, and then southeast to the Cheyenne Hub in northeastern Colorado.

2.0 NOXIOUS AND INVASIVE WEED INVENTORY

The BLM maintains a National List of Invasive Weed Species of Concern for western states that includes 132 plant species. The BLM inventory for Colorado can be accessed at: http://www.co.blm.gov/botany/weedhome.htm. The BLM inventory for Wyoming can be accessed at: http://www.wy.blm.gov/weeds/whatis.htm.

Not all invasive species are legally designated as noxious species. Colorado and Wyoming also maintain official state lists of weed species that are designated noxious species. Information on the State of Colorado Weed Management Program and species lists can be obtained at: http://www.ag.state.co.us/DPI/weeds/Weed.html. Information on the State of Wyoming Weed and Pest Districts and species lists can be obtained at: http://www.wyoweed.org/wp_dist.html.

Colorado

Under its Colorado Weed Management Act, §§ 35-5.5-101 through 119, C.R.S. (2000), Colorado has officially designated 82 plant species as noxious, divided into three lists. List A species are noxious weeds that are not common to the state and require eradication. Upon identification of list A species, the State Weed Coordinator/County Weed Control Supervisor are to be notified to coordinate control efforts. List B species are noxious weeds for which the state is currently developing management plans but does not require treatment for at this time. List C species are weed species commonly found throughout the state. While the state does not require treatment for species included on its Lists B and C, control of these species may be required at the county level.

Wyoming

Under the authority of the Wyoming Weed and Pest Control Act of 1973 (Wyoming Statute 115-119), Wyoming has officially designated 24 plant species as noxious. Per the Act, weed control is the responsibility of the landowner or the owner of rights-of-way or easement. Similar to Colorado, noxious weed control is required at the county level.

Consultations

Through consultations with the BLM, the states of Colorado and Wyoming, Colorado and Wyoming Departments of Agriculture, and the individual counties affected by the project, a list of noxious weeds of concern within the project area was developed and is presented in table 2-1. County Weed Districts and BLM Field Offices were requested to identify known noxious weed infestations within the vicinity of the proposed right-of-way and aboveground facilities. The known locations of existing noxious weed infestations are identified in table 2-1. Copies of consultation letters, e-mail, and phone logs of conversation with BLM and county weed management staff are included with this plan.

TABLE 2-1
Entrega Gas Pipeline Project
Noxious and Invasive Weed Species and Existing Populations

State/County/Agency	Noxious Weed Species of Concern Within the Project Area	Existing Noxious Weed Populations Within the Project Area (If known) a/
COLORADO		
State List A – designated for eradication	▪ African rue ▪ camelthorne ▪ common crupina ▪ cypress spurge ▪ Dyer's woad ▪ giant salvinia ▪ hydrilla ▪ meadow knapweed ▪ Mediterranean sage ▪ medusahead ▪ myrtle spurge ▪ purple loosestrife ▪ rush skeltonweed ▪ sericea lespedeza ▪ squarrose knapweed ▪ tansy ragwort ▪ yellow starthistle	
BLM Little Snake Field Office	• biannual thistle • cheatgrass • dalmation toadflax • halogeton • houndstongue • leafy spurge • tall whitetop • tamarisk • whitetop	
BLM White River Field Office	• black henbane • bull thistle • Canada thistle • houndstongue • mullein • musk thistle • perennial pepperweed • spotted knapweed	• Magnolia • Citadel, Magnolia • Citadel, WRay Gullch, Magnolia • Citadel, Magnolia • Magnolia • Citadel, Colorow, WRay Gulch, Magnolia • Crooked Wash/Deep Channel • Colorow

TABLE 2-1
Entrega Gas Pipeline Project
Noxious and Invasive Weed Species and Existing Populations

State/County/Agency	Noxious Weed Species of Concern Within the Project Area	Existing Noxious Weed Populations Within the Project Area (If known) a/
Rio Blanco Co.	• black henbane • Canada thistle • common burdock • common mullein • dalmation toadflax • diffuse knapweed • field bindweed • halogeton • hoary cress • houndstongue • leafy spurge • musk thistle • perennial pepperweed • plumeless thistle • Russian knapweed • Scotch thistle • spotted knapweed • sulfur cinquefoil • yellow toadflax • yellow starthistle	• MP 9.0 • MP 1.5, 9.0, 15.5 • MP 1.5, 6.5 • MP 15.3 • MP 1.5, 9.0 • MP 7.8, 15.5 • MP 18.0 • MP 9.0 • MP 1.5, 18.0 • MP 1.5, 2.4, 7.0
Moffat Co.	• perennial pepperweed	• MP 28-30
Larimer Co.	• dalmation toadflax • yellow toadflax	• MP 318.6
Weld Co.	• Russian knapweed • diffuse knapweed • Canada thistle • field bindweed • dalmation toadflax • musk thistle • leafy spurge • Scotch thistle	• northwestern Weld County. • northwestern Weld County.
WYOMING		
BLM Rawlins Field Office	• diffuse knapweed • spotted knapweed • Canada thistle • houndstongue • dalmation toadflax • musk thistle • whitetop • perennial pepperweed • field bindweed • leafy spurge • Russian knapweed • common burdock • Dyers woad • salt cedar • halogeton	• MP 220-248 high potential • MP 220-248 high potential • MP 296-319 high potential; MPs 269, 273.5, 296 • MP 117-152 high potential; MP 117, MPs 121-122 and 193 • MPs 176 and 261-267 • MP 193 • MPs 122.3, 193, 194.5-199, and 225-226 • MPs 96 and 98-99 • MP 90-220 intermittent throughout; MPs 101-107 and 175-193

TABLE 2-1
Entrega Gas Pipeline Project
Noxious and Invasive Weed Species and Existing Populations

State/County/Agency	Noxious Weed Species of Concern Within the Project Area	Existing Noxious Weed Populations Within the Project Area (If known) a/
	• Russian thistle • black henbane • kochia • gum weed	• MP 90-220 intermittent throughout; MPs 175-193 and 285 • MP 220-248 high potential • MP 254-255 • MP 254-255
Sweetwater County	• black henbane • foxtail barley	
Carbon County	• halogeton • plains pricklypear • plains larkspur • Wyeth lupine • spotted knapweed • Canada thistle • black henbane • whitetop • houndstounge • musk thistle • leafy spurge	The county will be doing a survey of the route for noxious weeds and will provide project maps with locations of noxious weeds. • halogeton
Albany County	• spotted knapweed • black henbane • Canada thistle • houdstongue • dalmation toadflax • musk thistle • whitetop • perennial pepperweed	• spotted knapweed – located near Carbon Co. line; • black henbane – located near Laramie County and west of Buford; • Canada thistle – located near water; • houndstongue, dalmation toadflax, musk thistle located from Laramie Co line west to Hwy 287; • whitetop and perennial pepperweed located between Hwy 287 and NW of the Little Laramie River
Laramie County	• dalmation toadflax • leafy spurge • Canadian thistle	

a/ Known weed inventories include infestation areas that were provided by BLM field offices and county weed personnel. Entrega will conduct a weed survey prior to construction in summer of 2005.

2.1 Weed Management Areas

Weed Management Areas (WMAs) are typically determined by multiple partners (*e.g.*, federal, state, and local agencies, organizations, private landowners) who collectively identify the boundaries of a management area and work with landowners in that area to contribute to the management of a designated weed species. The Middle Colorado River Watershed Cooperative Weed Management Area (MCRWCWMA) acts in such a coordinating role for northwestern Colorado and northeastern Utah. Other partners in weed control include the Southeast Carbon County (WY) Weed Management Area. WMAs are based on the location of a weed infestation or an area that is deemed a high priority to detect and control weeds. The

parties work together to plan and budget weed management efforts for both long term and seasonal needs. The Wyoming Weed and Pest Management Districts, Rio Blanco County, Colorado, and the MCRWCWMA are currently updating their lists of noxious species and known locations; these will be compared with the proposed pipeline route when available.

3.0 NOXIOUS WEED MANAGEMENT

Entrega's weed management program is designed to:

- identify areas supporting weeds prior to construction;
- prevent the introduction and spread of weeds from construction equipment during construction; and,
- contain weed seeds and propagules by preventing segregated topsoil from being spread to areas.

3.1 Identification of Problem Areas

Entrega conducted incidental surveys for weed species of concern within the project area concurrent with biological and botanical surveys. These surveys were conducted by qualified specialists in weed identification. Entrega also identified known locations of weed infestations in the project area by contacting county and local weed control districts and BLM field offices (see table 2-1). In addition to the areas supporting known infestations, all areas supporting noxious and invasive species will be delineated by the Environmental Inspectors (EI) by using color-coded flagging on the construction right-of-way prior to construction. The construction alignment sheets will identify the location of known weed infestations. Identification of existing noxious and invasive weed locations will alert environmental inspection and construction personnel to implement weed control measures during construction.

3.2 Preventive Measures

The following measures will be implemented to prevent the spread of noxious weeds:

- Prior to the beginning of construction of the project, all Contractor vehicles and equipment will be cleaned of soil and debris capable of transporting weed propagules. All contractor vehicles and equipment will be inspected by the EIs and may require additional cleaning if necessary prior to mobilization to the right-of-way. Additionally, all Contractor vehicles and equipment will be required to be cleaned of soil and debris capable of transporting weed propagules, prior to entering each county. Cleaning will be conducted by high pressure wash or other means. Any equipment moved from an area that is known to contain noxious or invasive weeds will be washed or otherwise cleaned before moving out of the infested area;
- A vehicle cleaning station will be installed at the Yampa River crossing (MP 50.5) as requested by the BLM;
- Areas of the right-of-way where weed infestations are identified will be clearly marked prior to construction. In these areas, the Contractor will stockpile cleared

vegetation and segregated topsoil (see Entrega's Plan for topsoil segregation requirements) along the right-of-way during construction. The stockpiles will be maintained adjacent to the areas from which they were obtained to eliminate the transport of soil-borne noxious and invasive weed propagules to other areas along the right-of-way. During reclamation, the Contractor will return topsoil and vegetative material to the areas from which they were obtained. Pretreatment of noxious and invasive weeds may be conducted in selected areas where required by the landowner. Pretreatment methods may include the application of herbicide or mowing to prevent seed development (see section 3.3 Treatment Methods);

- The Contractor will ensure that straw or hay bales used to construct sediment control devices or used as mulch applications will be certified weed free and obtained from approved certified sources as recommended by the County Weed and Pest Districts, Weed Control Supervisors, and the States of Colorado and Wyoming.
- The Contractor will ensure that seed mixes utilized for revegetation will be certified weed free and obtained from approved certified sources as recommended by the States of Colorado and Wyoming;
- The Contractor will implement reclamation procedures of disturbed lands immediately following construction as described in the Construction Mitigation and Reclamation Plan (CM&R Plan). Continuing revegetation efforts will ensure adequate vegetative cover to discourage the invasion of noxious and invasive weeds. In areas of severe weed infestation, as determined by Entrega's environmental inspector(s), Entrega may elect to delay reclamation efforts and conduct intensive weed control efforts prior to implementing reclamation procedures. In areas where the project is co-located with the WIC Piceance Basin Expansion Project, the two companies will work together to reclaim the disturbed area as detailed in Entrega's CM&R Plan; and,
- The Contractor will limit the use of fertilizer in reclaimed areas. Fertilizer will only be applied where specified by the jurisdictional land management agency or the property owner.

3.3 Treatment Methods

Entrega's objective and intent is to assist local, county, and state noxious and invasive weed control efforts, comply with the requirements to prevent the spread of noxious and invasive weeds, and treat areas of the right-of-way where weed species form a significant portion of the vegetation community in comparison to adjacent undisturbed areas. Entrega's will utilize established reclamation practices to prevent the establishment of noxious and invasive weeds in reclaimed construction areas and pipeline right-of-way. Noxious and invasive weed control efforts will include use of certified seed mixes and certified weed-free mulch. In the event noxious and invasive weed species become established in the right-of-way, Entrega will make good faith efforts to eradicate weeds in the right-of-way and to work with adjacent landowners to prevent spread of the species to adjacent lands.

Entrega will implement weed control measures in accordance with existing regulations and jurisdictional land management agency or landowner agreements and in accordance with Entrega's Upland Erosion Control, Revegetation, and Maintenance Plan. Entrega intends to utilize state certified weed control contractor services as recommended by the local regulatory entities. Post-construction weed control measures may include mechanical, biological, and/or alternative methods and/or the application of herbicide. The weed control measure chosen will be the best method available for the time, place, and species of weed.

- Mechanical methods entail the use of equipment to mow or disc weed populations. Mechanical treatments will be conducted prior to seed maturation where required. If such a method is used, subsequent seeding will be conducted to re-establish a desirable vegetative cover that will stabilize the soils and slow the potential re-invasion of weeds. Seed selection will be based on site-specific conditions and the appropriate seed mix identified for those conditions, as presented in the CM&R Plan. Seed mixes utilized for revegetation will be certified weed free.
- Biological control methods may include use of agents such as goats, sheep, or insects. Local regulatory advice will be sought for biological noxious and invasive weed control.
- Alternate weed control measures such as prescribed burns, repeated pulling, mowing, or introduction of aggressive desirable species may be applicable in sensitive habitat and other areas. Local regulatory advice will be sought for alternative noxious and invasive weed control.
- Herbicide application is an effective means of reducing the size of weed populations. Herbicide applications will be conducted prior to seed maturation where possible. Applications will be controlled, as described in section 5.1, to minimize the impacts on the surrounding vegetation. Spot herbicide applications will be the preferred option. In areas of dense infestation, a broader application will be used and a follow-up seeding program implemented. Seed selection will be based on site-specific conditions and the appropriate seed mix identified for those conditions, as presented in the CM&R Plan. The timing of subsequent revegetation efforts will be based on the persistence of the selected herbicide.

Herbicide treatment methods will be based on species-specific and area-specific conditions (*e.g.,* proximity to water, riparian areas, or agricultural areas, and time of year) and will be coordinated with the local counties and regulatory agencies.

3.4 BLM Specific Requirements

The BLM has developed specific requirements for herbicide use on BLM managed lands. The *Final Environmental Impact Statement on Vegetation Treatment on BLM Lands in Thirteen Western States* (USDI 1991) lists 19 herbicides acceptable for use on BLM lands. Guidelines for the use of chemical control of vegetation on BLM lands are presented in the BLM's Chemical Pest Control Manual. These guidelines require submittal of a Pesticide Use Proposal (PUP) and Pesticide Application Records (PARs) for the use of herbicides on BLM lands.

The occurrence of weeds within the pipeline right-of-way will be reported to the BLM field office where the weeds occur. The appropriate weed control procedures, including target species, timing of control, and method of control, will be determined in consultation with BLM personnel. Entrega will be responsible for providing the necessary personnel or hiring a Contractor to implement the weed control procedures. Entrega may be able to utilize cooperative agreements that may exist between the BLM and counties by providing the funds required for county personnel to implement the necessary weed control procedures.

4.0 MONITORING

Following construction, Entrega will monitor the pipeline right-of-way and proposed facilities for weeds. Initially, noxious and invasive weed infestations will be monitored as part of Entrega's revegetation monitoring as required by its CM&R Plan. Following the end of Entrega's revegetation monitoring program, weed infestations will be monitored as part of its operations and maintenance surveys.

Entrega's effort to reclaim areas disturbed during construction will be evaluated over a period of 5 years. Successful reclamation performance will be based on revegetation success (*e.g.,* cover and diversity), the absence of weeds or invasive plants, and the erosional stability of the construction right-of-way. Additionally, the FERC and BLM will conduct monitoring of the project area that will continue until they have determined revegetation is successful. Landowners will be consulted regarding weed control status and implementation measures, and will be encouraged to report concerns to Entrega. Landowners can contact Entrega by talking with their specified land agent, calling Entrega's toll-free line (1-866-305-3830), or by submitting an electronic comment on Entrega's website (http://www.entregapipeline.com).

To evaluate the success of revegetation, Entrega will monitor quadrants (*i.e.,* rectangular analytical plots identified in the field and retrievable by GIS equipment) located in the right-of-way, and control quadrants located outside the right-of-way. Plant diversity, percent cover, and other data obtained from the reclaimed right-of-way will be compared to vegetative data obtained from the undisturbed, naturally-occurring vegetative populations adjacent to the right-of-way. Variation between plots will provide a quantitative indication of the relative success of reclamation.

Entrega will use a team composed of a vegetative specialist and a weed expert to survey and conduct the program annually in July for 5 years following construction. As requested by the Moffat County Natural Resources Department, Entrega will survey beginning in June in Moffat County. Entrega will consult with the BLM or appropriate regulatory agency prior to initiating the program, to determine appropriate locations. Entrega will obtain landowner permission prior to conducting surveys. Where required, following the initial 5 years of monitoring Entrega will implement additional revegetation and/or weed control programs in areas where monitoring has determined that additional measures would be necessary.

Entrega will prepare annual Reclamation Monitoring Reports. These reports may include information such as:

- A summary of the general vegetative cover and diversity between the right-of-way and the comparison with off right-of-way vegetation quadrants;

- An assessment of the condition of transplants in riparian areas;
- Photographs;
- Identification of areas that require remedial action;
- Recommendations and schedule for remedial action(s); and,
- Monitoring forms.

Copies of these monitoring reports will be kept on file with Entrega and will be provided annually to appropriate agency personnel.

5.0 HERBICIDE APPLICATION, HANDLING, SPILLS, AND CLEANUP

5.1 Herbicide Application and Handling

Herbicide application will be based on information gathered from the local Weed Districts and the BLM. Before application, Entrega or its Contractor will obtain any required permits from the local Weed Districts and/or the BLM. A licensed Contractor will perform the application in accordance with applicable laws and regulations.

All herbicide applications will follow United States Environmental Protection Agency label instructions. Application of herbicides will be suspended when any of the following conditions exists:

- Wind velocity exceeds 10 miles per hour (mph) during application of liquids or 15 mph during application of granular herbicides;
- Snow or ice covers the foliage of noxious weeds; or
- Precipitation is occurring or is imminent.

Vehicle-mounted sprayers (*e.g.,* handgun, boom, injector) will be used mainly in open areas that are readily accessible by vehicle. Hand application methods (*e.g.,* backpack spraying) that target individual plants will be used to treat small or scattered weed populations in rough terrain. Calibration checks of equipment will be conducted at the beginning of spraying and periodically to ensure that proper application rates are achieved.

Herbicides will be transported to the project site daily with the following provisions:

- On-site herbicide quantities will be limited where practical;
- Concentrate will be transported in approved containers only and in a manner that will prevent tipping or spilling, and in a compartment that is isolated from food, clothing, and safety equipment;
- Mixing will be conducted in an upland area and at a distance greater than 100 feet from open or flowing water, wetlands, greater than 200 feet from private wells and greater than 400 feet from public wells. No herbicides will be applied at these areas unless authorized by appropriate regulatory agencies; and
- All herbicide equipment and containers will be inspected for leaks daily.

5.2 Herbicide Spills and Cleanup

Entrega has developed a Spill Containment and Control (SPCC) Plan that incorporates all reasonable precautions to be taken to avoid herbicide spills. In the event of a spill, cleanup will be immediate. Contractors will keep spill kits in their vehicles and in herbicide storage areas to allow for quick and effective response to spills. Items to be included in the spill kit are:

- protective clothing and gloves,
- a minimum of 20 pounds of suitable commercial adsorbent and barrier materials,
- plastic bags and bucket,
- shovel,
- fiber brush and screw-in handle,
- dust pan,
- caution tape, and
- detergent.

Response to an herbicide spill will vary depending on the material spilled, and the size and location of the spill. The order of priorities after discovering a spill are to protect the safety of personnel and the public, minimize damage to the environment, and conduct cleanup and remediation activities.

5.3 Worker Safety and Spill Reporting

All herbicide Contractors will obtain and have readily available copies of the appropriate material safety data sheets and the herbicide labels for the herbicides used. All herbicide spills will be reported in accordance with applicable laws and requirements. Refer to Entrega's SPCC Plan for further information regarding spill response and reporting.

6.0 REFERENCES

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Noxious Weed List for Colorado (12/2004)
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The Bureau of Land Management - Noxious Weed Inventory for Colorado (12/2004):
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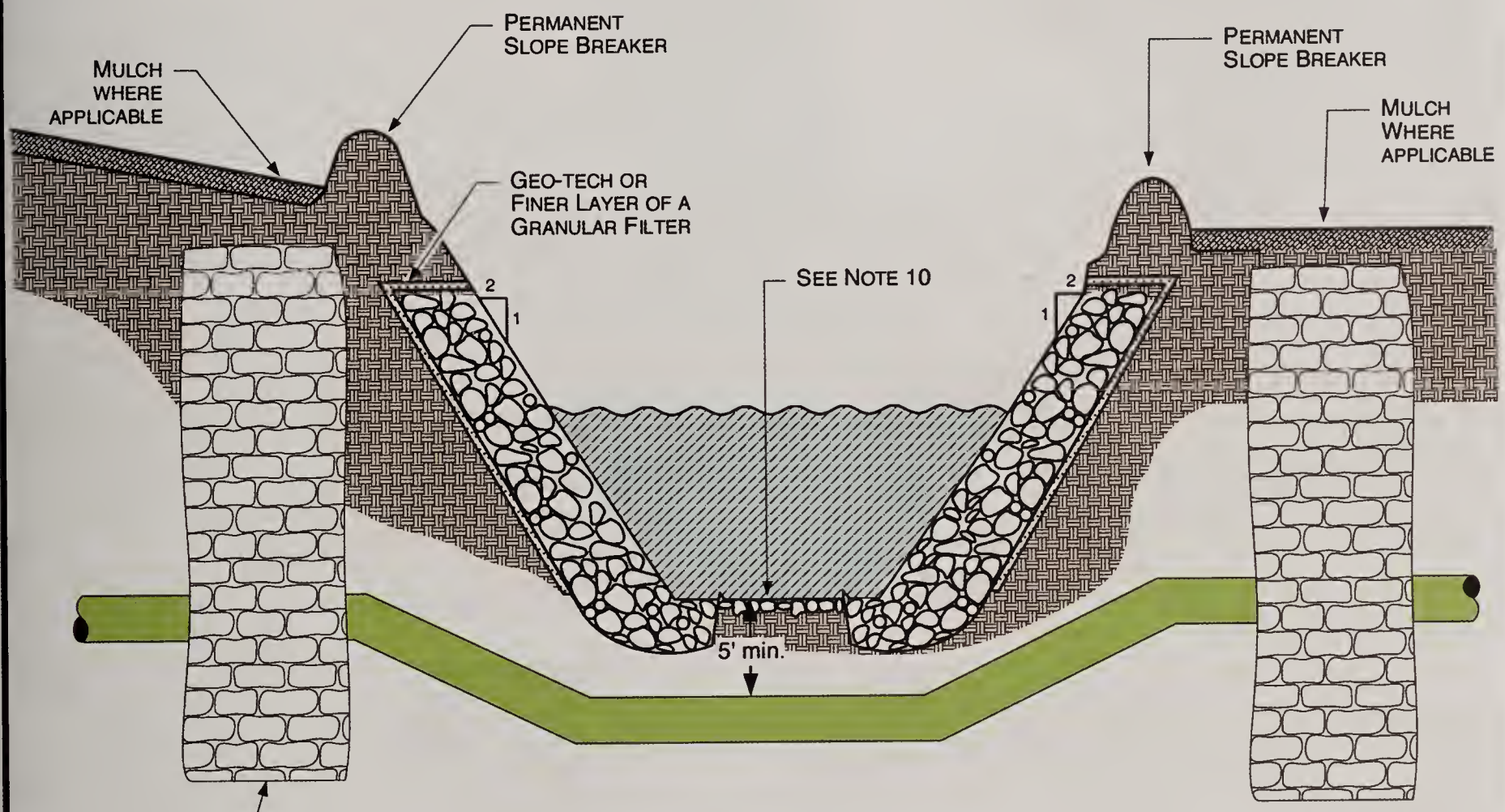
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APPENDIX E

ENTREGA'S TYPICAL INCISED BANK STABILIZATION RESTORATION PLAN

STREAM BANK PROFILE VIEW



NOTES:

1. ROCK RIPRAP IS THE MOST DESIRABLE TYPE OF REVETMENT. RIPRAP MUST BE HARD, DENSE, AND DURABLE. IT SHOULD BE RESISTANT TO WEATHERING, FREE FROM SPOIL, SHALE, AND ORGANIC MATERIAL. ROCK OR RUBBLE THAT IS LAMINATED, FRACTURED, POROUS, OR OTHERWISE PHYSICALLY WEAK IS UNACCEPTABLE AS ROCK SLOPE PROTECTION.
2. RIPRAP SHALL BE PUT IN PLACE BY MECHANICAL MEANS, SUCH AS A BACKHOE OR DRAGLINE.
3. THE FILTER MATERIAL MATERIALS SHALL CONSIST OF A LAYER OF GRAVEL, SMALL STONE, OR FILTER FABRIC. THE FILTER BEDDING IS TYPICALLY 6 INCHES TO 12 INCHES THICK, WITH THE THICKER DEPTH USED FOR LARGE DIAMETER ROCK. THE THICKNESS IS INCREASED BY 50 PERCENT IF PLACED UNDER WATER.
4. THE MEAN RIPRAP SIZE SHOULD BE EQUAL TO: $D50 = 0.010 V_{MC}^{2.44}$

   V_{MC} = AVERAGE VELOCITY IN THE MAIN CHANNEL, FT/SEC.
5. THE THICKNESS OF THE RIPRAP SHOULD NOT BE LESS THAN 1.25 TIMES THE DIAMETER OF THE UPPER LIMIT (D100) STONE, AND NOT LESS THAN 12 INCHES.
6. IF RIPRAP IS TO BE PLACED UNDER THE WATER SURFACE DEEPER THAN 3 FEET, THE THICKNESS SHOULD BE INCREASED BY 50 PERCENT IN ALL SECTIONS.
7. THE TOE OF THE RIPRAP SHOULD BE TRENCHED IN ALONG THE ENTIRE LENGTH OF THE RIPRAP BLANKET. CARE MUST BE TAKEN TO ENSURE THE TOE MATERIAL DOES NOT MOUND AND FORM A LOW DIKE.
8. THE FLANKS OF THE REVETMENT SHOULD BE TRENCHED IN, TAPERED OR OTHERWISE SECURED TO THE EXISTING BANK SO THAT IT TERMINATES AT A STABLE POINT.
9. ROW WILL BE REDUCED TO 75' WHEN INCISED BANKS HAVE A DEPTH GREATER THAN 20'.
10. TO REDUCE BOTTOM SCOUR, CLEAN GRAVEL OR NATIVE COBBLE WILL BE PLACED IN THE UPPER 1 FOOT OF TRENCH BACKFILL.

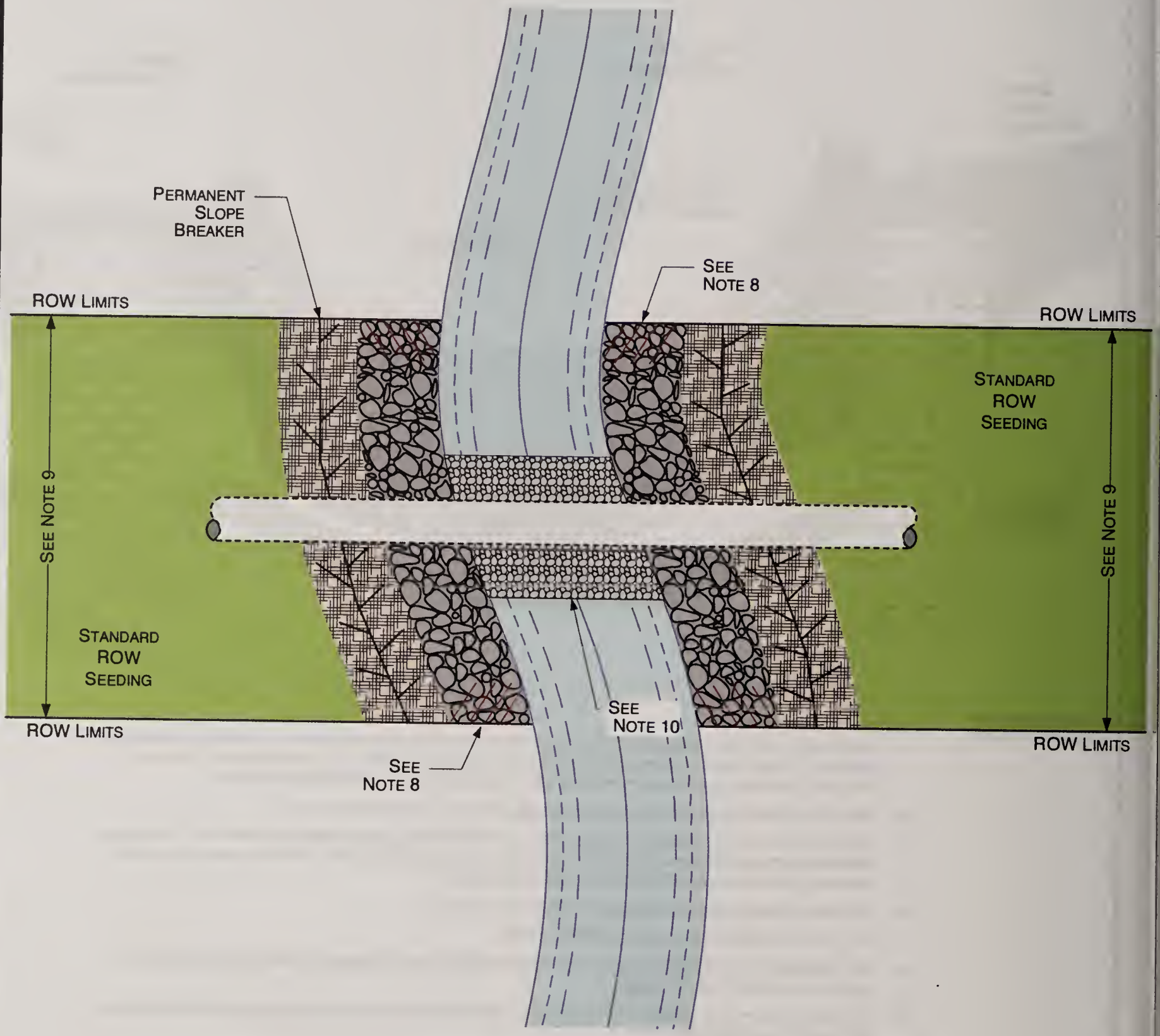
For environmental review purposes only.

ENTREGA
GAS PIPELINE INC.

Typical Incised Bank Stabilization Restoration Plan
Page 1 of 3

DATE:	10/13/2004
REVISED:	10/20/2004
SCALE:	NTS
DRAWN BY:	KJAnderson
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STREAM BANK PLAN VIEW



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GAS PIPELINE INC.

Typical Incised Bank Stabilization Restoration Plan
Page 2 of 3

DATE:	10/13/2004
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SCALE:	NTS
DRAWN BY:	KJAnderson
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Typical Stream Bank Photo



ENTREGA
GAS PIPELINE INC.

Typical Incised Bank Stabilization Restoration Plan

DATE: 10/18/04
REVISED: 10/18/04
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NATURAL RESOURCE GROUP, INC.

APPENDIX F

ENTREGA'S SITE-SPECIFIC WATERBODY CROSSING PLANS

SITE-SPECIFIC WATERBODY CROSSING PLANS

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1. INTRODUCTION

These site-specific waterbody crossing plans are intended to provide measures to be taken by Entrega Gas Pipeline, Inc. (Company) and its contractors (Contractor) for construction activities in and adjacent to the specified waterbodies crossed by the Entrega Gas Pipeline Project. These plans were developed as an implementing document for relative environmental protection measures contained in the project's plans and permits and Entrega's Wetland and Waterbody Construction and Mitigation Procedures (Procedures). Each drawing was designed as a draft plan. Minor changes in the field may occur based on current site conditions at the time of the crossings. The Environmental Inspector will have the authority to approve minor changes to the plans in the field and will document such changes appropriately.

1.1 Purpose

These plans are designed to minimize the environmental impacts to waterbodies, wildlife and aquatic species, and the soils and vegetation in the vicinity of each crossing. The plans also identify specific environmental protection measures that will be implemented during construction and restoration to minimize short- and long-term impacts to the waterbodies, adjacent wetlands, and riparian habitats.

1.2 Responsibility

1.2.1 Company

The Company (i.e., Entrega) will be responsible for meeting the goals and objectives of these plans and for ensuring that the Contractor implements the environmental protective measures identified on the attached drawings. Company Construction and Environmental Inspectors will help the Contractor construct each crossing in accordance with the site-specific plans and the state and Federal permits governing construction activities in or near waterbodies and wetlands. In addition, the Company will ensure that all marking/flagging will be installed prior to the start of work and remain visible and in place throughout construction.

1.2.2 Contractor

The Contractor will be responsible for implementing the requirements described in the attached drawings and will install and properly maintain all environmental protection measures. The Contractor will also be responsible for acquiring and distributing an adequate supply of erosion control materials to meet the daily construction requirements as well as for emergency situations. Prior to starting a waterbody crossing, the Contractor will stockpile erosion control materials on-site, in the event that additional materials are needed during the crossing.

1.3 Training

Each member of the project team will attend environmental training prior to working on the right-of-way. The environmental briefing will address the requirements of the project, including specific waterbody crossing mitigation measures. For all of the crossings detailed in this plan, all project personnel constructing the crossing will participate in on-site briefing (tailgate training) conducted by the Environmental Inspector that will outline the requirements of the site-specific plan.

1.4 Related Plans and Drawings

The following documents include additional requirements specifically related to construction in waterbodies:

- Entrega's Procedures;
- Section 2 of Entrega's Plan of Development prepared for the Bureau of Land Management;
- Typical Incised Bank Stabilization Restoration Plan;
- Entrega's Stormwater Pollution Prevention Plan (SWPPP);
- Entrega's Horizontal Directional Drilling Inadvertent Release Control Plan; and
- Entrega's Spill Prevention, Containment, and Countermeasure Plan (SPCC).

2. SITE-SPECIFIC CROSSINGS

Site-specific plans have been developed for six (6) crossings on the Entrega Gas Pipeline Project (see Attachment A). The waterbodies include the major perennial river crossings. Where pipe will be installed, the waterbody will be crossed using the open-cut crossings technique or horizontal directional drill (HDD) method. The four major waterbodies are the White River, Yampa River, Little Snake River, and Platte River. The Medicine Bow River and Rock Creek River have also been included at the request of the Federal Energy Regulatory Commission (FERC).

3. CONSTRUCTION METHODS

3.1 Timing Window for Construction

Due to U. S. Fish and Wildlife Service restrictions regarding the Colorado Pikeminnow, a federally endangered fish species, all in-stream construction in the White and Yampa Rivers will be prohibited after March 30 and until October 1. Entrega will adopt the HDD

method for these crossings to avoid the time restrictions imposed on construction due to the potential impacts to the Colorado Pikeminnow.

3.2 Flagging and Signing

In addition to site-specific resource protection flagging at such features as wetlands, cultural sites, and for vegetation protection, the Company will flag and/or sign the following boundaries:

- clearing and grading limits of the right-of-way;
- all temporary use area (TUA) boundaries;
- limits for 100-foot buffers for refueling; and
- vegetative buffers parallel to bank.

The Environmental Inspector and survey crew will install flagging and/or signs oriented on the right-of-way so they are highly visible throughout construction.

3.3 Vehicle and Equipment Crossing

It will be necessary for vehicles and equipment to cross waterbodies to access locations on the right-of-way, transport materials and pipe, and to install the pipe across the waterbody. Temporary equipment bridges may be installed across all waterbodies that are flowing or saturated at the time of construction. Figure 1 shows a typical bridged equipment crossing.

3.4 Hazardous Materials

An adequate supply of booms, skimmers, absorbent spill pads, and plastic bags in addition to the standard equipment (shovels, personal protective gear, fire fighting equipment, emergency contacts, storage containers, and communication equipment) will be on hand with each construction and cleanup crews to allow the rapid containment and recovery of spilled materials and equipment leaks. The Contractor will comply with all applicable requirements of Entrega's SPCC Plan.

3.5 Temporary Use Area (TUA) Requirements

TUAs will be required at a number of the waterbody crossings to store spoil and fabricate pipe. TUAs will be set-back from the top of the bank, out of riparian areas. In no case will TUAs be located closer than 10 feet from the top of the bank. The site-specific drawings contained in Attachment A depict the location and dimensions of TUAs and the associated erosion control structures intended to prevent sediment transport from a TUA to a waterbody.

3.6 Clearing and Grading

Prior to construction, the right-of-way and TUA boundaries will be staked and/or flagged. Clearing and grading activities will be limited to the staked boundaries as indicated on the site-specific drawings. A 10-foot buffer zone will be maintained at all waterbody crossings. Temporary erosion and sedimentation control measures will be installed prior to or immediately after earth disturbing activities.

3.7 Trenching and Backfilling

The trench will be excavated using a standard open-cut crossing technique (see below), unless otherwise noted on the site-specific drawing. All spoil generated from the crossing must be stored within the right-of-way limits at least 10 feet from the water's edge or in additional workspace as indicated on the site-specific drawings. Every effort will be made to complete the crossing within the timeframes specified in Entrega's Procedures.

3.7.1 Open-Cut Crossing Method

The open-cut crossing method will involve trenching through the waterbody while water continues to flow through the trenching area. Prior to initiating construction across the waterbody, pipe segments for the crossing will be fabricated in adjacent TUAs. Backhoes or draglines will then excavate a trench in the flowing waterbody from one or both of the waterbody banks. Where the waterbody is too wide to excavate the trench from the banks, equipment may operate from within the waterbody. Equipment operating within the waterbody will be limited to that needed to construct the crossing. Entrega will place spoil excavated from the trench in the stream bed or a minimum of 10 feet from the edge of the waterbody for temporary storage. Sediment barriers will be installed where necessary to prevent sediment and excavated spoil from entering the water. Earthen trench plugs will be left in place on both banks of the waterbody until immediately before pipe installation. This will separate the waterbody trench from the upland trench to prevent water from being diverted into the upland portions of the pipeline trench and to keep muddy water that accumulates in the upland trench from flowing into the waterbody. Once the trench is excavated, the prefabricated segment of pipe will be installed in the trench. Most pipe installed under waterbodies will be coated with concrete or equipped with set-on weights to provide negative buoyancy. The trench will then be backfilled with native streambed spoil. Entrega will complete all in-stream work within 48 hours for waterbody crossings less than 100 feet wide, water's edge-to-water's edge.

3.7.2 Horizontal Directional Drill Method

The HDD method is a technically advanced process involving skilled operators. HDD is a pipeline installation method typically used to avoid disturbance of sensitive surface features, including waterbodies and wetlands. The process uses drilling fluid consisting primarily of water and bentonite, a naturally occurring clay. The drilling fluid is prepared in the mixing tank using both new and clean recycled drilling fluid. The fluid is pumped at rates of 200 to 1,000 gallons per minute through the center of the drill pipe to the cutters.

Return flow is through the annulus created between the wall of the boring and the drill pipe. In the entry pit, the fluid is pumped to the fluid processing equipment. Typically, shaker screens, desanders, desilters, and centrifuges remove increasingly finer cuttings from the drilling fluid. The cleaned fluid is recycled to the mixing tank and pumps for reuse in the borehole. The excess cuttings are disposed of at a site approved to accept this type of material. Directional drilling does, however, present a remote potential for surface disturbance through inadvertent drilling fluid releases. Drilling fluid releases are typically caused by pressurization of the drill hole beyond the containment capability of the overburden soil material, which allows the drilling fluid to flow to the ground surface. Releases can be caused by fractures in bedrock or other voids in the geotechnical strata that allow the fluid to surface even if the downhole pressures are low. Providing adequate depth of cover for the installation can substantially reduce the potential for inadvertent releases. Detection of drilling fluid seepage is dependent upon the skill and experience of the drilling crew. A minimum depth of cover of 25-feet in competent soils is required to provide a margin of safety against drilling fluid seepage. The areas that present the highest potential for drilling fluid seepage are the drill entry and exit points where the overburden depth is minimal. At the entry and exit points, a pit can be constructed to collect and provide temporary storage for the drilling fluid seepage until it can be pumped into the drilling system.

3.8 Trench Dewatering

If trench dewatering is necessary, silt laden water from the trench will be discharged into a stable upland area. The flow will be directed into an energy dissipating device to reduce scour and minimize erosion. If a well vegetated upland area is not available, a straw bale dewatering structure or sediment filter bag will be used. Discharge areas will be located and identified in the field prior to construction of the crossing. The discharge must be situated to promote sheet flow and infiltration to the greatest extent possible. In no case will runoff from trench dewatering be allowed to return to a waterbody. The project's SWPPP provides additional information on trench dewatering techniques.

4. EROSION CONTROL AND RESTORATION

4.1 Erosion Control

Temporary erosion and sediment control structures will installed prior to or immediately after the first earth disturbing activity and will be maintained until permanent erosion control structures are in place. Erosion and sediment control structures will be placed as indicated on the site-specific plans, but may be moved or altered in the field to accommodate for actual runoff patterns at the time of construction. Permanent waterbars or similar runoff diversion devices will be installed on each side of the waterbody immediately after the pipe is installed, backfilled, and final graded. All erosion control structures will be installed and maintained in accordance with the plans listed in Section 1.4 of this document.

4.2 Restoration

Restoration of the streambed and banks will begin immediately after the trench is backfilled. The Contractor will make every effort to stabilize the channel and install temporary erosion control measures within 24 hours of completing the crossing. Waterbody banks will be returned to preconstruction contours, however, a slightly less angle of repose may be required to ensure bank stability. Final site restoration and permanent erosion controls will be completed, if possible, immediately following the completion of all construction activities, including hydrostatic testing.

Entrega will use clean gravel or native cobbles for the upper 1 foot of trench backfill in all waterbodies that contain coldwater fisheries (i.e., White River (if open cut contingency is needed), Little Snake River, North Platte River, Medicine Bow River, Rock Creek). Further, Entrega will install a permanent slope breaker across the construction right-of-way at the base of slopes greater than 5 percent that are less than 50 feet from the waterbody, or as needed to prevent sediment transport into the waterbody. In addition, Entrega will install sediment barriers as outlined in its Plan. In some areas, with the approval of the environmental inspector, an earthen berm may be suitable as a sediment barrier adjacent to the waterbody.

4.2.1 Riparian Restoration

Because riparian woodland exists at the North Platte River crossing, Entrega will adhere to the restoration and revegetation provisions outlined in its Site-Specific Construction and Revegetation Plan for Riparian Woodland Communities. These provisions include, but are not limited to, the following:

- Entrega will reduce permanent impacts to riparian woodland by limiting vegetation maintenance to allow a riparian strip at least 25 feet wide, as measured from the waterbody's mean high water mark, to permanently revegetate with native plant species across the entire construction right-of-way in accordance with section V.D.1 of its Procedures.

- Entrega will maintain a 10-foot-wide corridor centered over the pipeline in riparian woody areas in an herbaceous state in accordance with section V.D.1 of its Procedures.

- If conditions require, trees within 15 feet of the pipeline centerline that are greater than 15 feet in height may be selectively cut and removed from the right-of-way on an as-needed basis, not to exceed once every 3 years. Entrega will only use mechanical mowing or cutting along its right-of-way for normal vegetative maintenance. However, in those areas where the pipeline will parallel or be within adjacent rights-of-way, alternate means of vegetative maintenance may be used by the land owner(s) of those areas.

- No herbicides or pesticides will be used within 100 feet of a waterbody.

- Entrega will also reseed, plant, and/or allow for natural revegetation in the area disturbed by construction with tree and shrub species of similar type, diversity, and density. Entrega is in the process of consulting with the Bureau of Land Management, Rawlins Field Office, the Natural Resource Conservation Service, and the landowners of the properties containing riparian woodlands to develop seed mixes for reseeding in riparian woodland areas.

- In addition to reseeding with woody riparian seed mixes and where required by permit conditions, tree cuttings, containerized plants, or transplants, will be used to restore woody plant communities, stabilize riparian areas, and provide a visual screens to conceal the right-of-way.

Attachment A

Little Snake River, MP 84.5

1. The time windows outlined in Entrega's project-specific Procedures for crossing coldwater fisheries is June 1 through September 30. Entrega plans to start the crossing on or about August 15, 2005.
2. Prior to construction, the Contractor will post warning signs upstream of the crossing site visible to recreational users stating "Heavy construction equipment in use downstream within and near waterbody. Do not pass or use caution at crossing."
3. Access will be made along the right-of way on the north side and from an approved access road on the south side of the river.
4. The river will be crossed using the open-cut method.
5. A railroad car or equivalent span bridge with or without supports will be installed for access across the river.
6. Equipment refueling and hazardous material storage will occur in approved areas only. No refueling within 100 feet of the water's or wetland edge.
7. Unless depicted otherwise on the site-specific drawings, the TUA will be set back from the water's edge a minimum of 10 feet. No clearing will occur between the TUA and 10 feet of the water's edge.
8. At a minimum, the contractor will supply, install and maintain sediment control devices of staked straw bales, and or embedded silt fence along the limits of the TUAs as depicted on the drawings, except if otherwise approved by the Environmental Inspector.
9. Sediment control devices must be installed and maintained across the construction right-of-way and haul road, except during excavation and installation of the pipeline crossing segment. Sediment barriers must be installed between the spoil areas and the water's edge prior to in stream excavation. Erosion control devices must be functional across the right-of-way during non-working hours.
10. Contractor shall maintain hard or soft plugs in the trench until just prior to the installation of the crossing segment.
11. Contractor shall place stream trench spoil a minimum of 10 feet from the water's edge on the right-of-way and within the fenced TUA.
12. The stream will be backfilled with native material. Clean gravel or native cobbles will be used in the upper 1 foot of the trench backfill.
13. Contractor shall restore the stream bed and banks to approximate pre-construction contours after installation of the pipe segment.
14. Stream banks shall be stabilized with erosion control fabric or equivalent as soon as practical after completion of the crossing, but within 24 hours after completion of the crossing.
15. Contractor shall dispose of all excess spoil at a location approved to accept such waste
16. Trenching, installing the pipe and backfilling activities are projected to take 48 to 72 hours to complete. Site specific conditions such as blasting may prolong the process. Every attempt to expedite the crossing duration will be implemented.
17. Crossing must be completed after July 1, due to eagle nest proximity.
18. An adequate supply of booms, skimmers, absorbent spill pads, and plastic bags in addition to the standard equipment will be on hand with each construction and cleanup crews to allow the rapid containment and recovery of spilled materials and equipment leaks.
19. Rutting of wetlands within the construction right-of-way will be avoided. Timber riprap, prefabricated equipment mats, or terra mats will be used as needed for stability. Do not use rock, soil imported from outside the wetlands, tree stumps, or brush riprap to support equipment. If wetlands cannot be stabilized and access roads do not provide reasonable access, limit all other construction equipment to one pass through the wetland using the construction right-of-way.
20. Limit pulling of tree stumps within wetlands to directly over the trenchline. Segregate the top 1 foot of topsoil from the area disturbed by the trenchline, except in areas where standing water is present or soils are saturated or frozen. Restore the segregated topsoil to its original location during backfill. No fertilizer shall be used to restore wetlands.
21. During restoration, Entrega shall use seed that is tested to ensure compliance with federal and state seed requirements for weed control and certified for germination and pure live seed content. If the supply of a specific seed is limited or unavailable at the time of ordering, Entrega will obtain prior approval of the BLM or private land owner before ordering an alternative seed mix.
22. Contractor shall comply with all conditions as required by applicable permits and the company mitigation plans and procedures.

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ENTREGA GAS PIPELINE INC.

WATERBODY DETAIL

Crossing Notes – Little Snake River MP 84.5

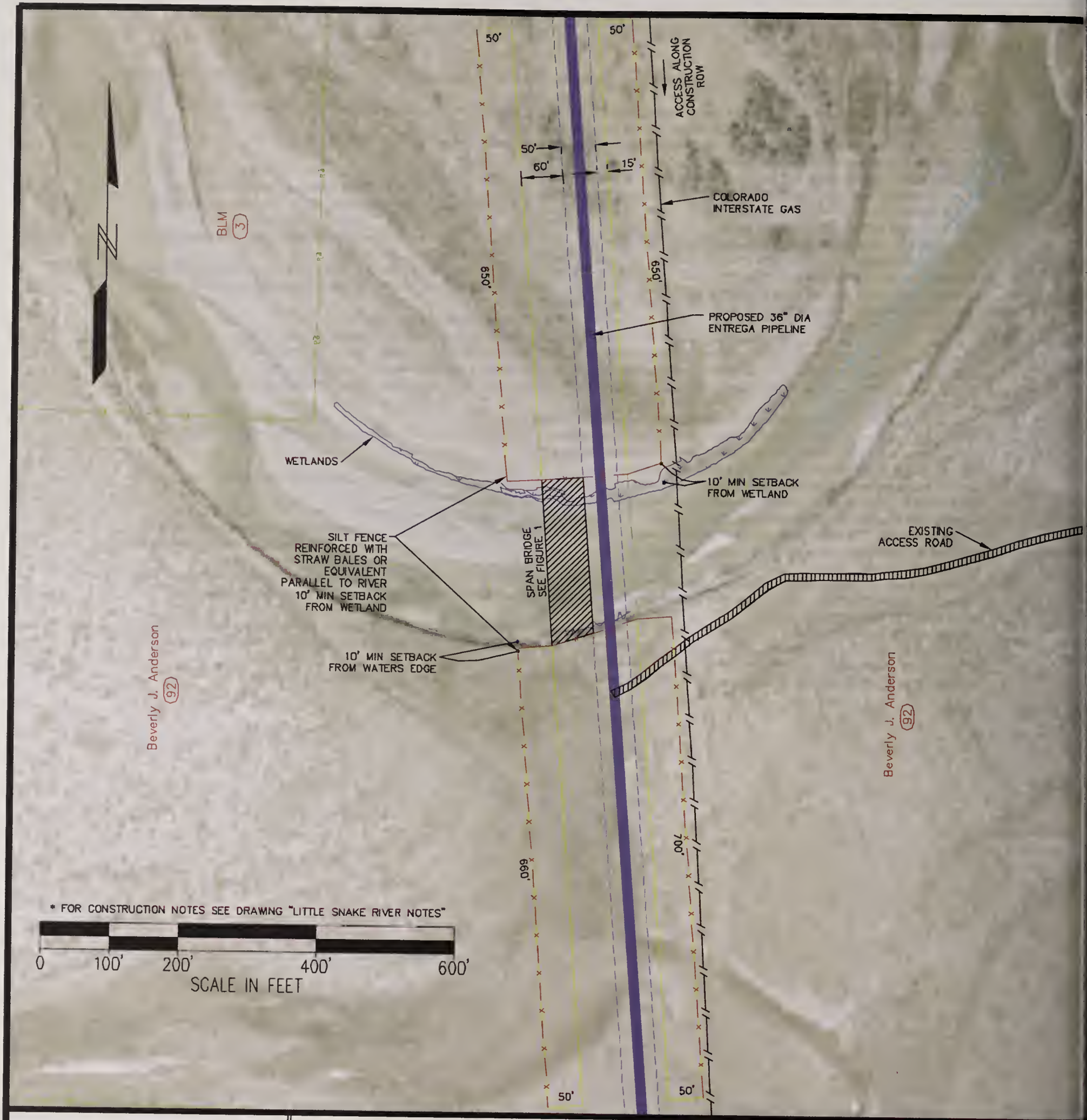
ENTREGA GAS PIPELINE — Moffat, Colorado

SCALE: N/A | CLJ 12/16/04

TRIGON EPC : ENGINEERING : PROCUREMENT : CONSTRUCTION

DRAWING NUMBER: LITTLE SNAKE RIVER NOTES

REV.: A



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ENTREGA GAS PIPELINE INC.

WATERBODY DETAIL

Open Cut Crossing Detail – Little Snake River MP 84.

ENTREGA GAS PIPELINE

Moffat, Colorado

SCALE: 1"=200'	CLJ 12/16/04			

TRIGON EPC : ENGINEERING : PROCUREMENT : CONSTRUCTION

DRAWING NUMBER	REV
LITTLE SNAKE RIVER	B

Medicine Bow River, MP 225.5

1. The time windows outlined in Entrega's project-specific Procedures for crossing coldwater fisheries is June 1 through September 30. Entrega plans to start the crossing on or about August 15, 2005.
2. Access will be made along the right-of way on both sides of the river.
3. The river will be crossed using the open-cut method.
4. A railroad car or equivalent span bridge with or without supports will be installed for access across the river.
5. Equipment refueling and hazardous material storage will occur in approved areas only. No refueling within 100 feet of the water's or wetland edge.
6. Unless depicted otherwise on the site-specific drawings, the TUA will be set back from the water's edge a minimum of 50 feet. No clearing will occur between the TUA and 50 feet of the water's edge.
7. At a minimum, the contractor will supply, install and maintain sediment control devices of staked straw bales, and or embedded silt fence along the limits of the TUAs as depicted on the drawings, except if otherwise approved by the Environmental Inspector.
8. Sediment control devices must be installed and maintained across the construction right-of-way, except during excavation and installation of the pipeline crossing segment. Sediment barriers must be installed between the spoil areas and the water's edge prior to in stream excavation. Erosion control devices must be functional across the right-of-way during non-working hours.
9. Contractor shall maintain hard or soft plugs in the trench until just prior to the installation of the crossing segment.
10. Contractor shall place stream trench spoil a minimum of 10 feet from the water's edge on the right-of-way and within the fenced TUA.
11. The stream will be backfilled with native material. Clean gravel or native cobbles will be used in the upper 1 foot of the trench backfill.
12. Contractor shall restore the stream bed and banks to approximate pre-construction contours after installation of the pipe segment.
13. Stream banks shall be stabilized with erosion control fabric or equivalent as soon as practical after completion of the crossing, but within 24 hours after completion of the crossing.
14. Contractor shall dispose of all excess spoil at a location approved to accept such waste.
15. Trenching, installing the pipe and backfilling activities are projected to take 48 to 72 hours to complete. Site specific conditions such as blasting may prolong the process. Every attempt to expedite the crossing duration will be implemented.
16. An adequate supply of booms, skimmers, absorbent spill pads, and plastic bags in addition to the standard equipment will be on hand with each construction and cleanup crews to allow the rapid containment and recovery of spilled materials and equipment leaks.
17. Rutting of wetlands within the construction right-of-way will be avoided. Timber riprap, prefabricated equipment mats, or terra mats will be used as needed for stability. Do not use rock, soil imported from outside the wetlands, tree stumps, or brush riprap to support equipment. If wetlands cannot be stabilized and access roads do not provide reasonable access, limit all other construction equipment to one pass through the wetland using the construction right-of-way.
18. Limit pulling of tree stumps within wetlands to directly over the trenchline. Segregate the top 1 foot of topsoil from the area disturbed by the trenchline, except in areas where standing water is present or soils are saturated or frozen. Restore the segregated topsoil to its original location during backfill. No fertilizer shall be used to restore wetlands.
19. During restoration, Entrega shall use seed that is tested to ensure compliance with federal and state seed requirements for weed control and certified for germination and pure live seed content. If the supply of a specific seed is limited or unavailable at the time of ordering, Entrega will obtain prior approval of the BLM or private land owner before ordering an alternative seed mix.
20. Contractor shall comply with all conditions as required by applicable permits and the company mitigation plans and procedures.

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ENTREGA GAS PIPELINE INC.

WATERBODY DETAIL

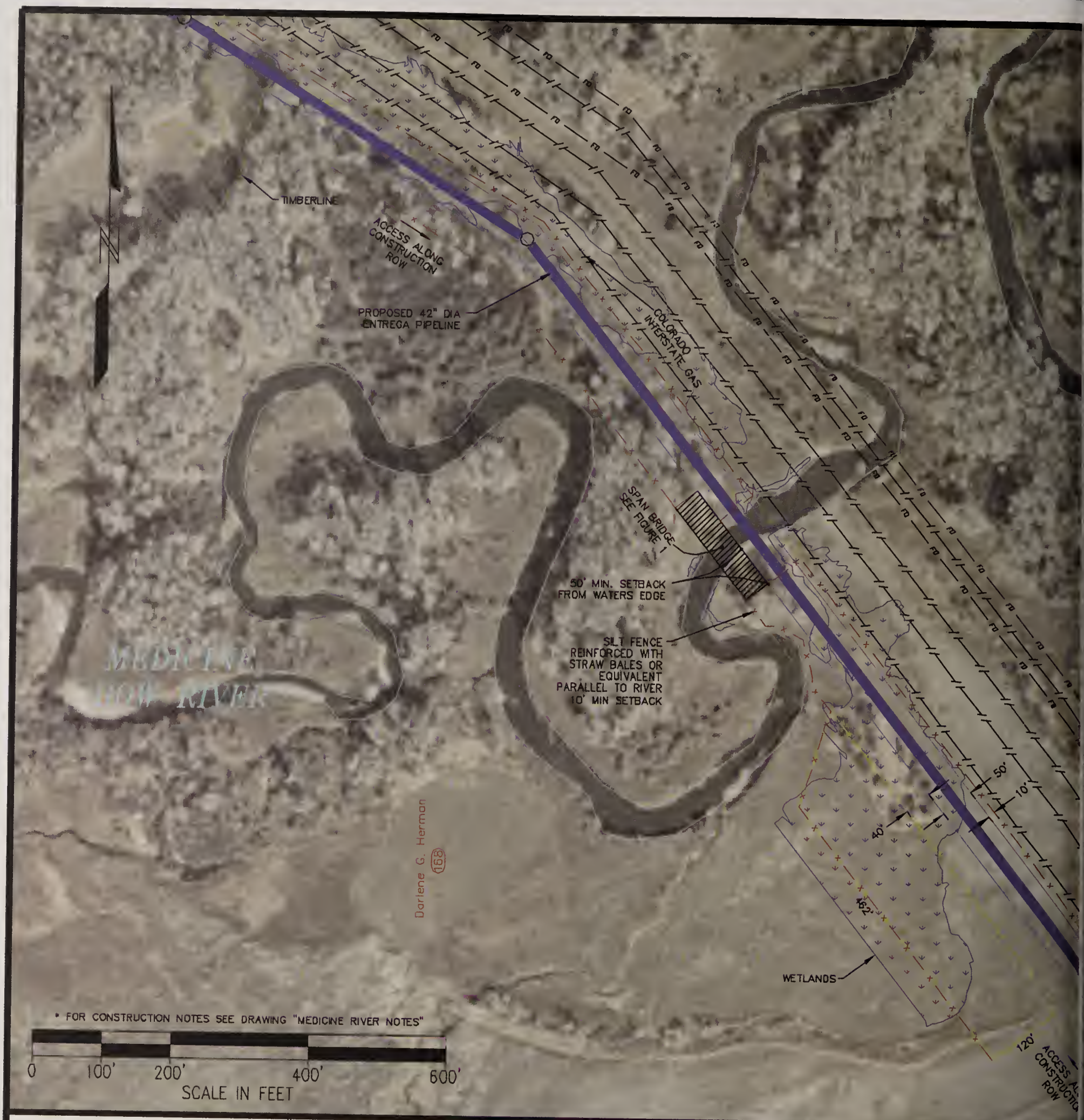
Crossing Notes – Medicine Bow River MP 225.5

ENTREGA GAS PIPELINE — Carbon, Wyoming

SCALE: N/A	CLJ 12/16/04			

TRIGON EPC : ENGINEERING : PROCUREMENT : CONSTRUCTION

DRAWING NUMBER	REV.
MEDICINE BOW RIVER NOTES	A



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ENTREGA GAS PIPELINE INC.

WATERBODY DETAIL

Open Cut Crossing Detail – Medicine Bow River MP 225.

ENTREGA GAS PIPELINE

Carbon, Wyoming

SCALE: 1"=200'	CLJ 12/16/04			

TRIGON EPC : ENGINEERING : PROCUREMENT : CONSTRUCTION

DRAWING NUMBER	REV
MEDICINE BOW RIVER	B

North Platte River, MP 192.7

1. The time windows outlined in Entrega's project-specific Procedures for crossing coldwater fisheries is June 1 through September 30. Entrega plans to start the crossing on or about August 15, 2005.
2. Access will be made on a county road on the west side and from an approved access road on the east side of the river.
3. A railroad car or equivalent span bridge with or without supports may be installed for access across the river.
4. Equipment refueling and hazardous material storage will occur in approved areas only. No refueling within 100 feet of the water's or wetland edge.
5. Unless depicted otherwise on the site-specific drawings, the TUA will be set back from the water's edge a minimum of 50 feet. No clearing will occur between the TUA and 50 feet of the water's edge.
6. At a minimum, the contractor will supply, install and maintain sediment control devices of staked straw bales, and or embedded silt fence along the limits of the TUAs as depicted on the drawings, except if otherwise approved by the Environmental Inspector.
7. Sediment control devices must be installed and maintained across the construction right-of-way and haul road, except during excavation and installation of the pipeline crossing segment. Sediment barriers must be installed between the spoil areas and the water's edge prior to in stream excavation. Erosion control devices must be funetional across the right-of-way during non-working hours.
8. Contractor shall maintain hard or soft plugs in the trench until just prior to the installation of the crossing segment.
9. Reduce the width of the construction ROW to 75 feet on the island within the waterbody.
10. Contractor shall place stream trench spoil a minimum of 10 feet from the water's edge on the right-of-way and within the fenced TUA.
11. The stream will be backfilled with native material. Clean gravel or native cobbles will be used in the upper 1 foot of the trench backfill.
12. Contractor shall restore the stream bed and banks to approximate pre-construction contours after installation of the pipe segment.
13. Stream banks shall be stabilized with erosion control fabric or equivalent as soon as practical after completion of the crossing, but within 24 hours after completion of the crossing.
14. Contractor shall dispose of all excess spoil at a location approved to aecept such waste.
15. Trenching, installing the pipe and backfilling activities are projected to take 48 to 72 hours to completc. Site specific conditions such as blasting may prolong the process. Every attempt to expedite the crossing duration will be implemented.
16. Contractor will also refer to Entrega's Site-Specific Construction and Revegetation Plan for riparian woodland communities for guidance regarding woodland existing at north platter river crossing summarized in section 4.2.1.
17. Minimum of one week (7 days) prior to commencing work at the North Platte River, the following individuals shall be notified:

    Mr. Scott Schmidt
    City of Rawlins Water Treatment plant
    Rawlins, WY
    307/328-4564

    Mr. Dean Cunningham, Water Plant Engineer
    Sinclair Refinery
    Sinclair, WY
    307/328-3532

    and/or

    Mr. Charlie Welch, Chief Operator, River Pump Station
    Sinclair Refinery
    Sinclair, WY
    307/328-3513

    Mr. Robert Jaure, Maintenance Foreman
    Wyoming Department of Transportation
    Rawlins, WY 82301
    307/328-4107

18. An adequate supply of booms, skimmers, absorbent spill pads, and plastic bags in addition to the standard equipment will be on hand with each construction and cleanup crews to allow the rapid containment and recovery of spilled materials and equipment leaks.
19. Rutting of wetlands within the construction right-of-way will be avoided. Timber riprap, prefabricated equipment mats, or terra mats will be used as needed for stability. Do not use rock, soil imported from outside the wetlands, tree stumps, or brush riprap to support equipment. If wetlands cannot be stabilized and access roads do not provide reasonable access, limit all other construction equipment to one pass through the wetland using the construction right-of-way.
20. Limit pulling of tree stumps within wetlands to directly over the trenchline. Segregate the top 1 foot of topsoil from the area disturbed by the trenchline, except in areas where standing water is present or soils are saturated or frozen. Restore the segregated topsoil to its original location during backfill. No fertilizer shall be used to restore wetlands.
21. During restoration, Entrega shall use seed that is tested to ensure compliance with federal and state seed requirements for weed control and certified for germination and pure live seed content. If the supply of a specific seed is limited or unavailable at the time of ordering, Entrega will obtain prior approval of the BLM or private land owner before ordering an alternative seed mix.
22. Contractor shall comply with all conditions as required by applicable permits and the company mitigation plans and procedures.
23. Public access along Carbon County Road 347, west of the North Platte River, will be maintain during construction by means leaving a lane of traffic open or providing a detour.

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ENTREGA GAS PIPELINE INC.

WATERBODY DETAIL

Crossing Notes – North Platte River MP 192.7

ENTREGA GAS PIPELINE — Carbon, Wyoming

SCALE: N/A	CLJ 12/16/04			

TRIGON EPC • ENGINEERING • PROCUREMENT • CONSTRUCTION

DRAWING NUMBER	REV.
NORTH PLATTE RIVER NOTES	A



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C	REVISED TUA
B	REVISED DELINEATED WETLAND DATA

ENTREGA GAS PIPELINE INC.

WATERBODY DETAIL

Open Cut Crossing Detail – North Platte River MP 192.

ENTREGA GAS PIPELINE

Carbon, Wyoming

SCALE: 1"=400'

CLJ 12/16/04

TRIGON EPC • ENGINEERING • PROCUREMENT • CONSTRUCTION

DRAWING NUMBER: NORTH PLATTE RIVER

REV: C

Rock Creek, MP 237.3

1. The time windows outlined in Entrega's project-specifie Procedures for crossing eoldwater fisheries is June 1 through September 30. Entrega plans to start the crossing on or about July 15, 2005.
2. A minimum of one week (7 days) prior to instream work at Roek Creek, the following individual shall be notified:
   Mr. David Lemler - Chief Water Plant Operator
   Town of Roek River, WY
   Offiee: 307/378-2386
   Home: 307/378-2479
3. Aecess will be made along the right-of way on both sides of the river.
4. The river will be crossed using the open-cut method.
5. A railroad ear or equivalent span bridge with or without supports will be installed for access aeross the river.
6. Equipment refueling and hazardous material storage will occur in approved areas only. No refueling within 100 feet of the water's or wetland edge.
7. Unless depieted otherwise on the site-speeifie drawings, the TUA will be set baek from the water's edge a minimum of 50 feet. No elearing will oeeur between the TUA and 50 feet of the water's edge.
8. At a minimum, the eontractor will supply, install and maintain sediment eontrol deviees of staked straw bales, and or embedded silt fenee along the limits of the TUAs as depieted on the drawings, except if otherwise approved by the Environmental Inspector.
9. Sediment control deviees must be installed and maintained across the construetion right-of-way, exeept during excavation and installation of the pipeline erossing segment. Sediment barriers must be installed between the spoil areas and the water's edge prior to in stream excavation. Erosion eontrol deviees must be funetional across the right-of-way during non-working hours.
10. Contractor shall maintain hard or soft plugs in the treneh until just prior to the installation of the erossing segment.
11. Contractor shall place stream treneh spoil a minimum of 10 feet from thc watcr's edge on the right-of-way and within the fenced TUA.
12. The stream will be baekfilled with native material. Clean gravel or native eobbles will be used in the uppcr 1 foot of the treneh baekfill.
13. Contractor shall restore the stream bed and banks to approximate pre-construetion eontours after installation of the pipe segment.
14. Stream banks shall be stabilized with erosion control fabrie or equivalent as soon as praetical after eompletion of the crossing, but within 24 hours after eompletion of the crossing.
15. Contraetor shall dispose of all exeess spoil at a location approved to accept sueh waste.
16. Treneh ing, installing the pipe and baekfilling activities are projeeted to take 48 to 72 hours to eomplete. Site speeifie eonditions sueh as blasting may prolong the proeess. Every attempt to expedite the crossing duration will be implemented.
17. An adequate supply of booms, skimmers, absorbent spill pads, and plastie bags in addition to the standard equipment will be on hand with eaeh eonstruetion and eleanup crews to allow the rapid eontainment and recovery of spilled materials and equipment leaks.
18. Rutting of wetlands within the construetion right-of-way will be avoided. Timber riprap, prefabrieated equipment mats, or terra mats will be used as needed for stability. Do not use roek, soil imported from outside the wetlands, tree stumps, or brush riprap to support equipment. If wetlands cannot be stabilized and access roads do not provide reasonable access, limit all other eonstruetion equipment to one pass through the wetland using the construetion right-of-way.
19. Limit pulling of tree stumps within wetlands to directly over the trenehline. Segregate the top 1 foot of topsoil from the area disturbed by the trenehline, exeept in areas where standing water is present or soils are saturated or frozen. Restore the segregated topsoil to its original loeation during baekfill. No fertilizer shall be used to restore wetlands.
20. During restoration, Entrega shall use seed that is tested to ensure eomplianee with federal and state seed requirements for weed eontrol and certified for germination and pure live seed content. If the supply of a speeifie seed is limited or unavailable at the time of ordering, Entrega will obtain prior approval of the BLM or private land owner before ordering an alternative seed mix.
21. Contraetor shall comply with all conditions as required by applieable permits and the company mitigation plans and procedures.

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ENTREGA GAS PIPELINE INC.

WATERBODY DETAIL

Crossing Notes – Rock Creek MP 237.3

ENTREGA GAS PIPELINE — Carbon, Wyoming

SCALE: N/A	CLJ 12/16/04				
TRIGON EPC • ENGINEERING • PROCUREMENT • CONSTRUCTION				DRAWING NUMBER: ROCK CREEK NOTES	REV.: A



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ENTREGA GAS PIPELINE INC.

WATERBODY DETAIL

Open Cut Crossing Detail – Rock Creek MP 237.3

ENTREGA GAS PIPELINE

Carbon, Wyoming

SCALE: 1"=200'	CLJ 12/16/04			

TRIGON EPC • ENGINEERING • PROCUREMENT • CONSTRUCTION

DRAWING NUMBER	REV
ROCK CREEK	B

White River, MP 15.1

1. The White River will be crossed using the horizontal directional drill (HDD) crossing method. In the event the HDD method proves to be unsuccessful, Entrega will cross the Whiter River using the open cut method.
2. Prior to construction, the Contractor will post warning signs upstream of the crossing site visible to recreational users stating "Heavy construction equipment in use downstream within and near waterbody. Do not pass or use caution at crossing."
3. A railroad car or equivalent span bridge with or without supports may be installed for access across the river.
4. Equipment refueling and hazardous material storage will occur a minimum of 100 feet from the water's or wetland edge.
5. At a minimum, the contractor will supply, install and maintain sediment control devices of staked straw bales, and/or embedded silt fence across the right-of--way and along the limits of the TUAs as depicted on the drawings, except if otherwise approved by the Environmental Inspector.
6. Sediment control devices must be installed and maintained across the construction right-of-way and haul road, except during excavation and installation of the pipeline crossing segment. Erosion control devices must be functional across the right-of-way during non-working hours.
7. Contractor shall dispose of all excess spoil and drilling fluid/cuttings at a location approved to accept such waste.
8. Jim Dewitt of the City of Rangeley to be notified of equipment liquid spills that may affect the city water intake ASAP 970-675-8221 or 911.
9. Scott Wansteadt, Blue Mtn. Energy, to be notified of equipment liquid spills that may affect the mine water intake. 970-675-8431/3607.
10. Contractor shall be responsible for clean-up of all drilling fluid releases. Contractor to provide equipment and personnel for immediate containment and clean-up of drill fluid release at all times during drilling operations (Entrega's Response Plan for Inadvertent Release of Drilling Fluid During HDD Activities).
11. The contractor, construction inspector, or environmental inspector will immediately notify Entrega's construction management personnel in the event of a drill fluid frac out. Entrega will notify the appropriate agencies, including the bureau of land management immediately upon discovery of an inadvertent release into a wetland or waterbody, detailing the location and nature of the release, corrective actions being taken, and whether the release poses any threat to public safety.
12. Containment and clean-up of drill fluid frac outs located outside of designated workspace and right-of-way shall be coordinated with Entrega construction management and environmental inspector.
13. An adequate supply of booms, skimmers, absorbent spill pads, and plastic bags in addition to standard equipment will be on hand with each construction and cleanup crew to allow the rapid containment and recovery of spilled materials and equipment leaks.
14. Rutting of wetlands within the construction right-of-way shall be avoided. Timber riprap, prefabricated equipment mats, or terra mats will be used as needed for stability. Do not use rock, soil imported from outside the wetlands, tree stumps, or brush riprap to support equipment. If wetlands cannot be stabilized and access roads do not provide reasonable access, limit all other construction equipment to one pass through the wetland using the construction right-of-way.
15. Limit pulling of tree stumps within wetlands to directly over the trenchline. Segregate the top 1 foot of topsoil from the area disturbed by the trenchline, except in areas where standing water is present or soils are saturated or frozen. Restore the segregated topsoil to its original location during backfill. No fertilizer shall be used in restoration of wetlands.
16. During restoration, Entrega shall use seed that is tested to ensure compliance with federal and state seed requirements for weed control and certified for germination and pure live seed content. If the supply of a specific seed is limited or unavailable at the time of ordering, Entrega will obtain prior approval of the BLM or private land owner before ordering an alternative seed mix.
17. Contractor shall comply with all conditions as required by applicable permits and the company mitigation plans and procedures.
18. Paleontological monitoring is required if trenching on South side of river extends into bedrock.

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ENTREGA GAS PIPELINE INC.

WATERBODY DETAIL

Crossing Notes – White River MP 15.1

ENTREGA GAS PIPELINE — Rio Blanco, Colorado

SCALE: N/A	CLJ 12/16/04			

TRIGON EPC : ENGINEERING : PROCUREMENT : CONSTRUCTION

DRAWING NUMBER	REV.
WHITE RIVER NOTES	A



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C	REVISED TUA	
B	REVISED DELINEATED WETLAND DATA	

ENTREGA GAS PIPELINE INC.

WATERBODY DETAIL

Open Cut Contingency Crossing Detail – White River MP 15.

ENTREGA GAS PIPELINE

Rio Blanco, Colorado

SCALE: 1"=300'	CLJ 12/16/04			

TRIGON EPC : ENGINEERING : PROCUREMENT : CONSTRUCTION

DRAWING NUMBER	REV
WHITE RIVER	C



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ENTREGA GAS PIPELINE INC.

WATERBODY DETAIL

HDD Crossing Detail – White River MP 15.1

ENTREGA GAS PIPELINE

Rio Blanco, Colorado

SCALE: 1"=300'	CLJ 12/16/04			

TRIGON EPC : ENGINEERING : PROCUREMENT : CONSTRUCTION

DRAWING NUMBER	REV.
WHITE RIVER	C

Yampa River, MP 50.5

1. The Yampa River will be crossed using the horizontal directional drill (HDD) crossing method. In the event the HDD method proves to be unsuccessful, Entrega will cross the Yampa River using the open cut method.
2. Prior to construction, the Contractor will post warning signs upstream of the crossing site visible to recreational users stating "Heavy construction equipment in use downstream within and near waterbody. Do not pass or use caution at crossing."
3. A railroad car or equivalent span bridge with or without supports may be installed for access across the river.
4. Equipment refueling and hazardous material storage will occur a minimum of 100 feet from the water's or wetland edge.
5. At a minimum, the contractor will supply, install and maintain sediment control devices of staked straw bales, and or embedded silt fence across the right-of--way and along the limits of the TUAs as depicted on the drawings, except if otherwise approved by the Environmental Inspector.
6. Sediment control devices must be installed and maintained across the construction right-of-way and haul road, except during excavation and installation of the pipeline crossing segment. Erosion control devices must be functional across the right-of-way during non-working hours.
7. Contractor shall dispose of all excess spoil and drilling fluid/cuttings at a location approved to accept such waste.
8. Contractor shall operate all equipment outside of the fenced environmentally sensitive avoidance areas as depicted on the plans. If the buffer cannot be maintained, construction activities will need to stop and the site will need additional mitigation measures before activities can resume in this area.
9. Contractor shall be responsible for clean-up of all drilling fluid releases. Contractor to provide equipment and personnel for immediate containment and clean-up of drill fluid release at all times during drilling operations (see Entrega's Response Plan for Inadvertent Release of Drilling Fluid During HDD Activities).
10. The contractor, construction inspector, or environmental inspector will immediately notify Entrega's construction management personnel in the event of a drill fluid frac out. Entrega will notify the appropriate agencies, including the bureau of land management immediately upon discovery of an inadvertent release into a wetland or waterbody, detailing the location and nature of the release, corrective actions being taken, and whether the release poses any threat to public safety.
11. Containment and clean-up of drill fluid frac outs located outside of designated workspace and right-of-way shall be coordinated with Entrega construction management and environmental inspector.
12. An adequate supply of booms, skimmers, absorbent spill pads, and plastic bags in addition to standard equipment will be on hand with each construction and cleanup crew to allow the rapid containment and recovery of spilled materials and equipment leaks.
13. Rutting of wetlands within the construction right-of-way shall be avoided. Timber riprap, prefabricated equipment mats, or terra mats will be used as needed for stability. Do not use rock, soil imported from outside the wetlands, tree stumps, or brush riprap to support equipment. If wetlands cannot be stabilized and access roads do not provide reasonable access, limit all other construction equipment to one pass through the wetland using the construction right-of-way.
14. Limit pulling of tree stumps within wetlands to directly over the trenchline. Segregate the top 1 foot of topsoil from the area disturbed by the trenchline, except in areas where standing water is present or soils are saturated or frozen. Restore the segregated topsoil to its original location during backfill. No fertilizer shall be used in restoration of wetlands.
15. During restoration, Entrega shall use seed that is tested to ensure compliance with federal and state seed requirements for weed control and certified for germination and pure live seed content. If the supply of a specific seed is limited or unavailable at the time of ordering, Entrega will obtain prior approval of the BLM or private land owner before ordering an alternative seed mix.
16. Contractor shall comply with all conditions as required by applicable permits and the company mitigation plans and procedures.
17. If the buffer cannot be maintained to protect the environmentally sensitive area, construction will need to stop in this area and the site will need to undergo further mitigation.

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ENTREGA GAS PIPELINE INC.

WATERBODY DETAIL

Crossing Notes – Yampa River MP 50.5

ENTREGA GAS PIPELINE — Moffat, Colorado

SCALE: N/A.	CLJ 12/16/04			

TRIGON EPC : ENGINEERING : PROCUREMENT : CONSTRUCTION

DRAWING NUMBER	REV
YAMPA RIVER NOTES	A

* FOR CONSTRUCTION NOTES SEE DRAWING "YAMPA RIVER NOTES"

0 200' 400' 800' 1200'

SCALE IN FEET

PROPOSED 36" DIA ENTREGA PIPELINE

State Land Board of Colorado (61)

ACCESS ROAD

COLORADO INTERSTATE GAS

10'

50'

40'

100'

500'

Sam L. & Georgia B. McIntyre (60)

EXISTING FENCE LINE

Environmentally Sensitive Area

ENVIRONMENTAL SENSITIVE AREA SEE NOTE 17

AERIAL POWER LINE

10' MIN SETBACK FROM WATERS EDGE

SPAN BRIDGE SEE FIGURE 1

WETLANDS

10' MIN SETBACK FROM WATERS EDGE

SILT FENCE REINFORCED WITH STRAW BALES OR EQUIVALENT PARALLEL TO RIVER

EXISTING FENCE LINE

YAMPA RIVER (60)

300'

300'

100'

100'

ACCESS FROM US HWY 40 ALONG ROW

Bruce L. & Joyce K. Barnes (57)

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ENTREGA GAS PIPELINE INC.

WATERBODY DETAIL

Open Cut Contingency Crossing Detail – Yampa River MP 50.5

ENTREGA GAS PIPELINE

Moffat, Colorado

SCALE: 1"=400'	CLJ 12/16/04			

TRIGON EPC : ENGINEERING : PROCUREMENT : CONSTRUCTION

DRAWING NUMBER	REV.
YAMPA RIVER	B



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ENTREGA GAS PIPELINE INC.

WATERBODY DETAIL

HDD Crossing Detail – Yampa River MP 50.5

ENTREGA GAS PIPELINE

Moffat, Colorado

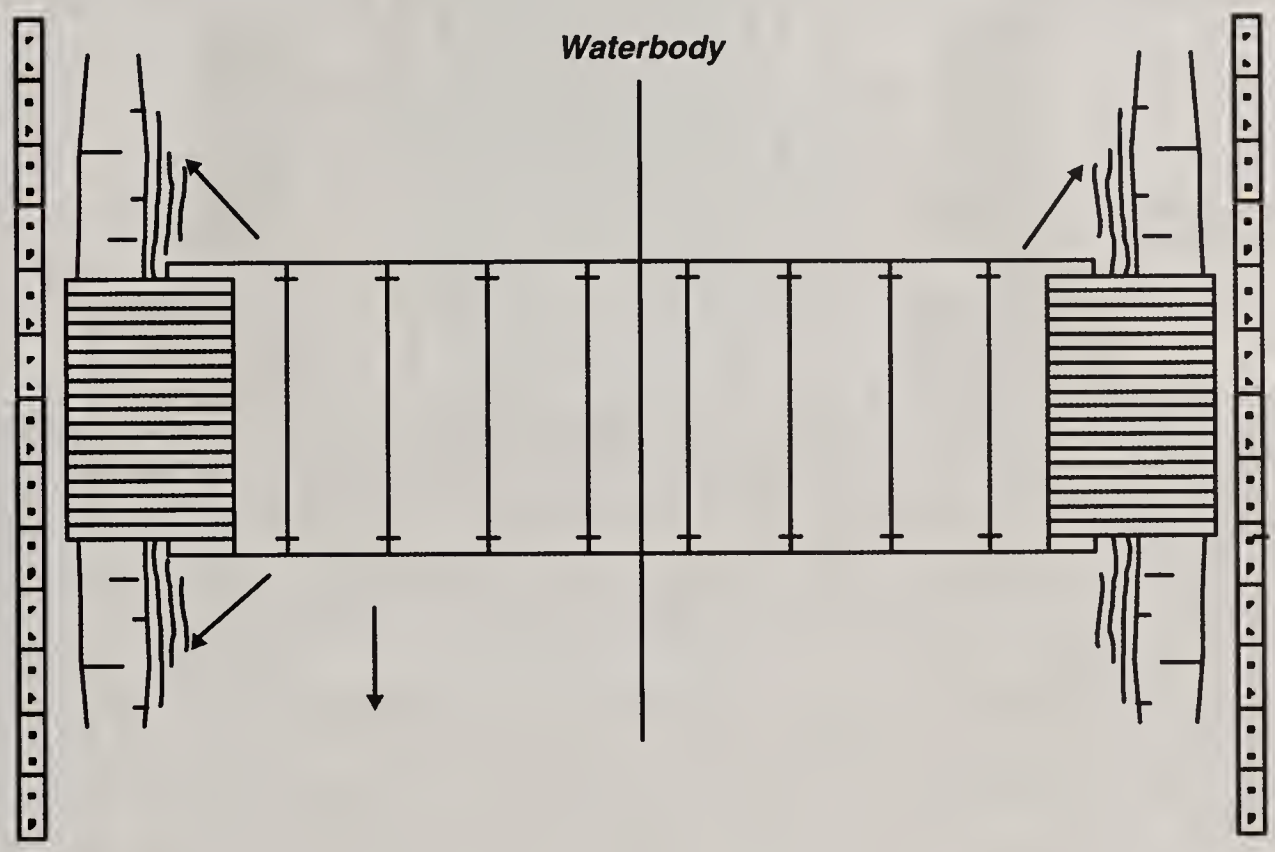
SCALE: 1"=400'	CLJ 12/16/04			

TRIGON EPC : ENGINEERING : PROCUREMENT : CONSTRUCTION

DRAWING NUMBER	REV.
YAMPA RIVER	B

Figures

PLAN



PROFILE

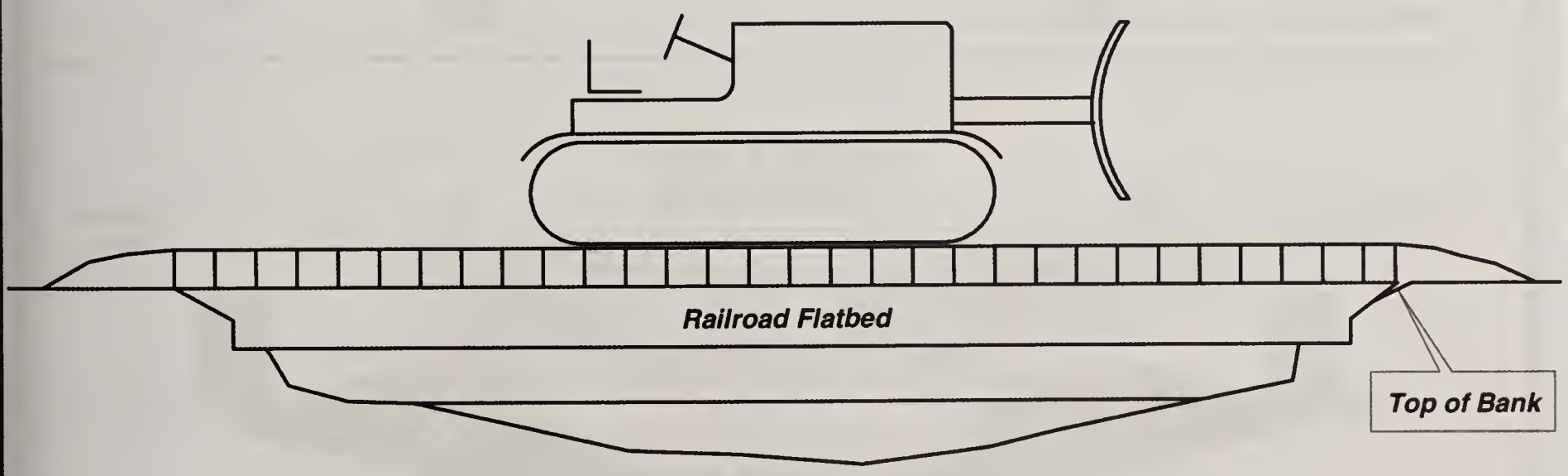


*Figure created from Trigon EPC.

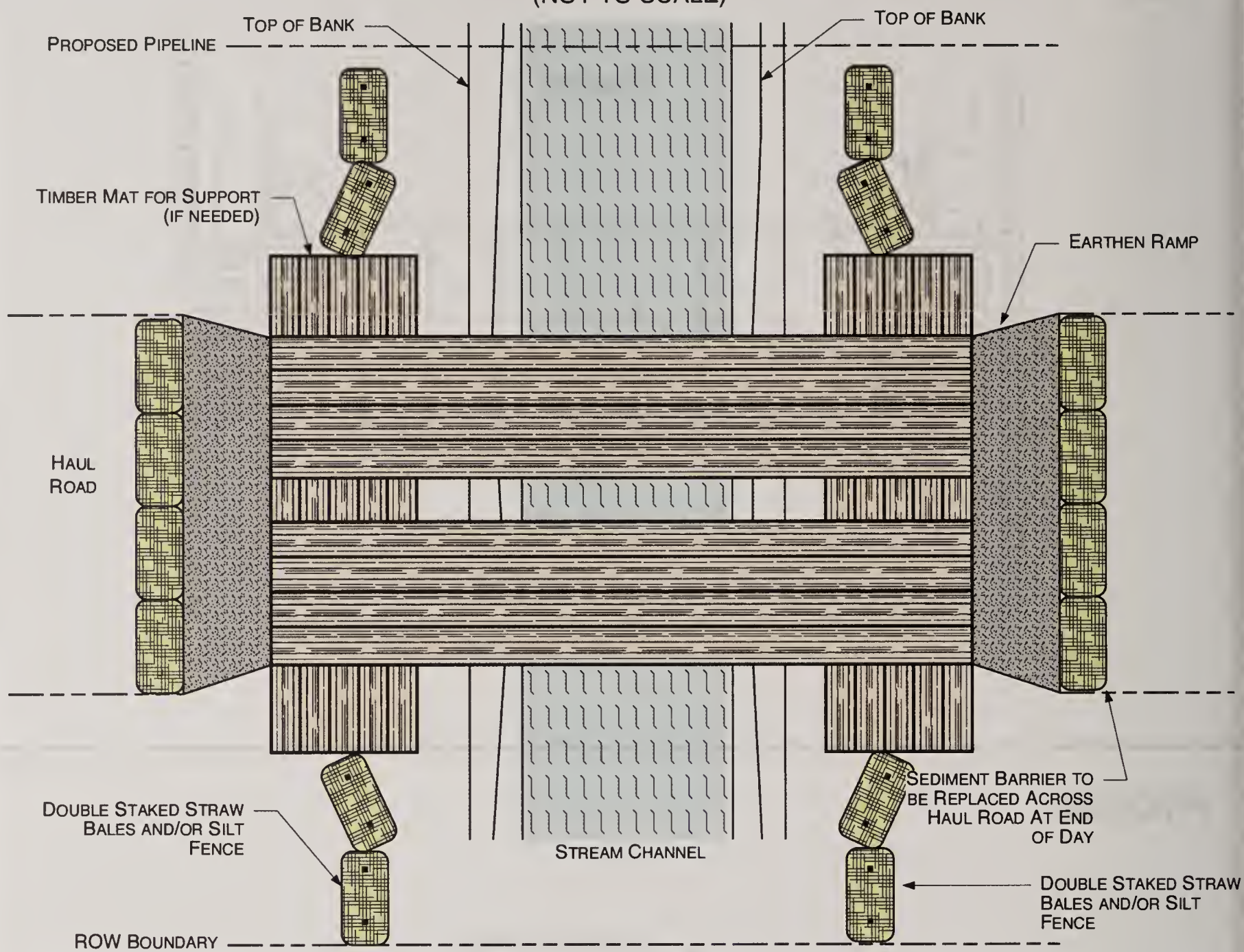
ENTREGA
GAS PIPELINE INC.

Figure 1a
Typical Railroad Bridge

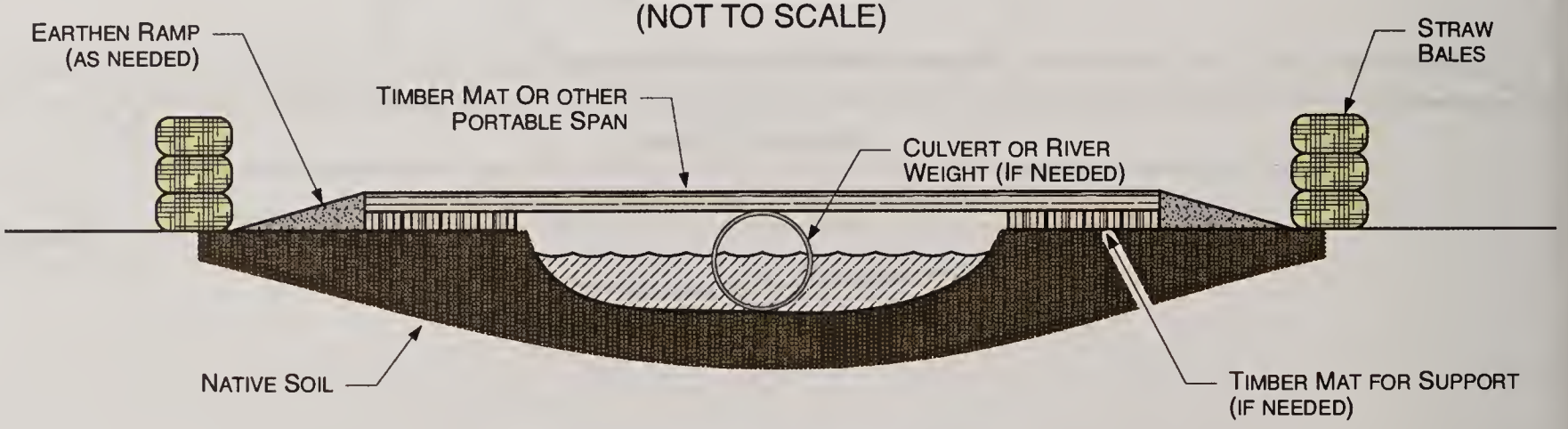
DATE: 12/21/04
REVISED: 12/21/04
SCALE: Not to Scale
DRAWN BY:KJANDERSON
M:\Clients\D-F\ENM\Feasibility_Autocad\Trigon\20041221\Flexi_Flo

NATURAL RESOURCE GROUP, INC.

PLAN VIEW
(NOT TO SCALE)



PROFILE VIEW
(NOT TO SCALE)

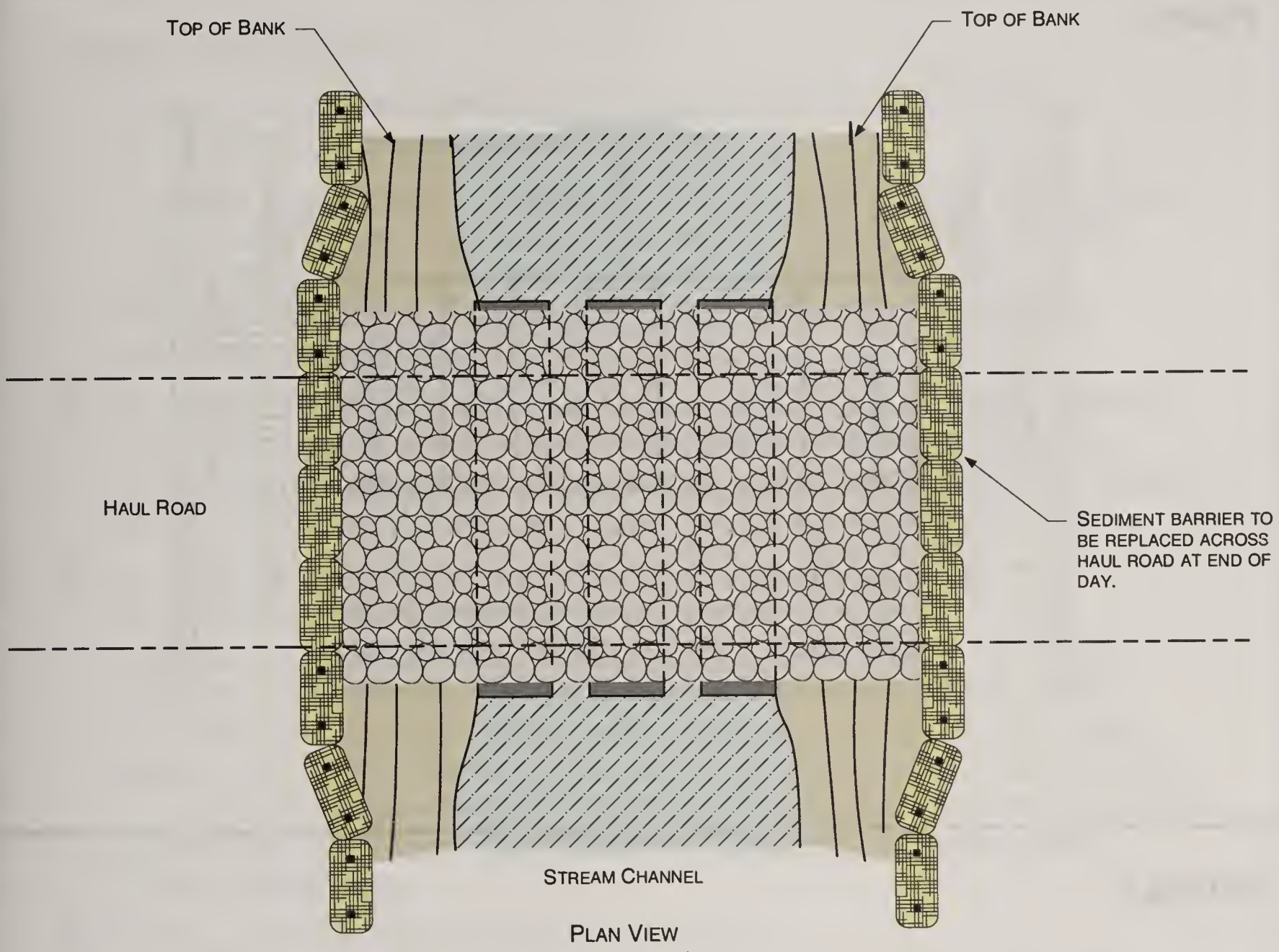


For environmental review purposes only.

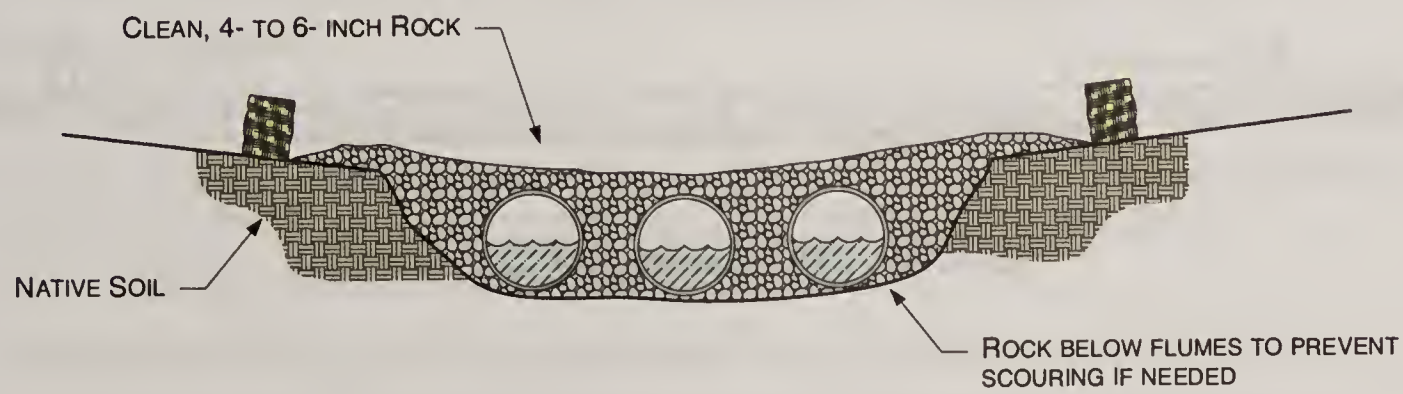
ENTREGA
GAS PIPELINE INC.

Figure 1b
Typical Timber Mat Bridge

DATE: 12/20/2004
REVISED: 12/21/2004
SCALE: NTS
DRAWN BY: KJAnderson
K:\366\060\TIMBER_MAT.VSD



PLAN VIEW
(NOT TO SCALE)



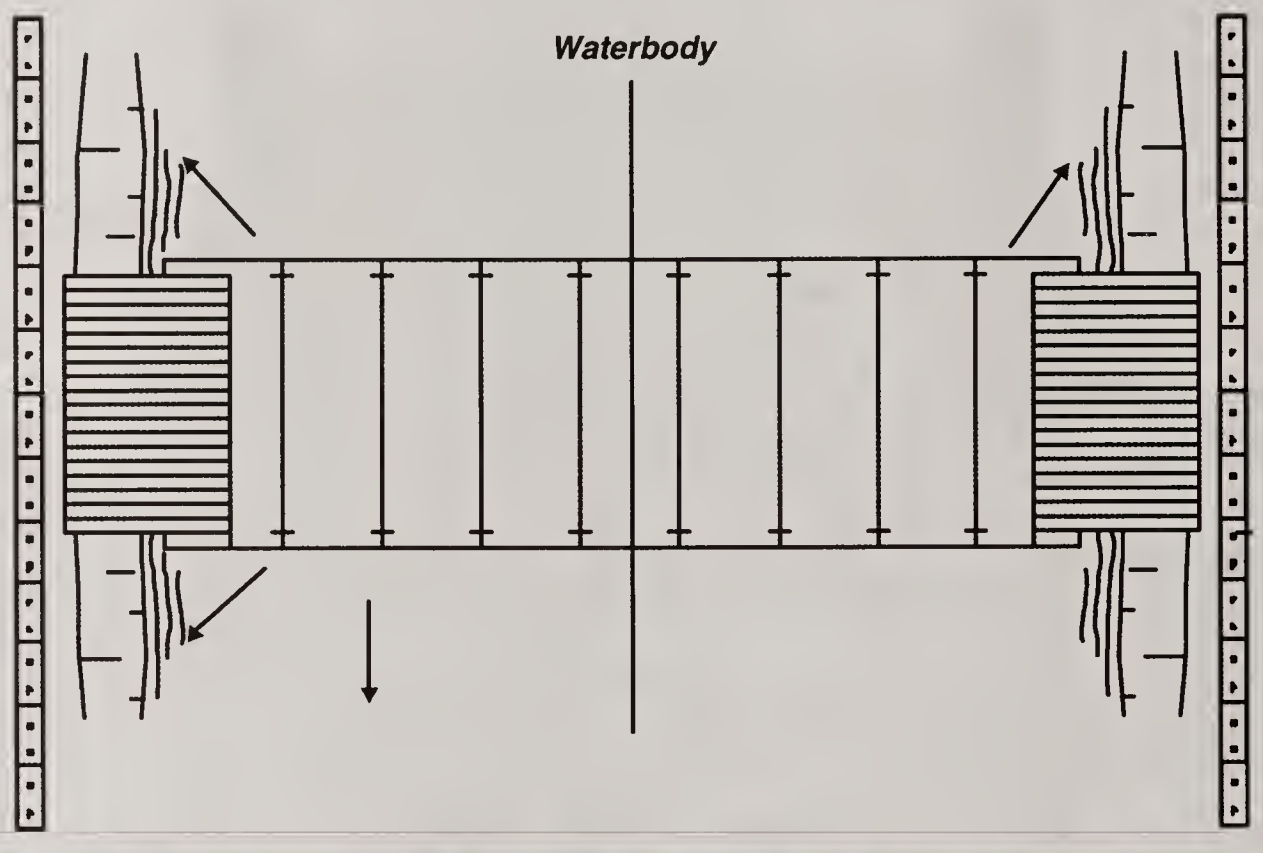
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ENTREGA
GAS PIPELINE INC.

Figure 1c
Typical Rock Flume Bridge

DATE: 12/20/2004
REVISED: 12/21/2004
SCALE: NTS
DRAWN BY: KJAnderson
K:\366\060\ROCK_FLUME_BRIDGE.VSD

PLAN



PROFILE

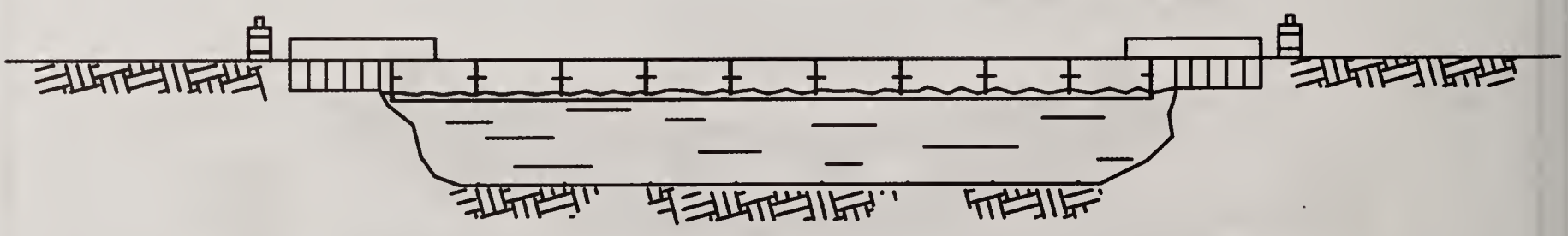


*Figure created from Trigon EPC.

ENTREGA
GAS PIPELINE INC.

Figure 1d
Typical Flexi-Float Bridge

DATE: 12/21/04
REVISED: 12/21/04
SCALE: Not to Scale
DRAWN BY:KJANDERSON
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NATURAL RESOURCE GROUP, INC.

Bridge Detail Notes:

1. Only clearing equipment may cross waterbodies before installation of the equipment bridge.
2. Design and maintain bridge to withstand and pass the highest anticipated flow that may occur while the bridge is in place. Culverts must be aligned to prevent bank erosion or streambed scour. If necessary, install energy dissipating devices downstream of the culverts.
3. Inspect bridge elevation so bridge remains supported above high bank, and does not sink into bank. Additional support must be added on top of bank and under span if initial support starts to settle. All bridges must be anchored for stability.
4. Erosion and sedimentation control measures shall be inspected and maintained in accordance with Entrega's upland erosion control, revegetation, and maintenance plan. Construct sediment barriers across the entire construction ROW to prevent silt laden water and spoil from flowing back into waterbody. Barriers may be temporarily removed to allow construction activities but must be replaced by the end of each work day. Siltfence, hay bales or sandbags may be used interchangeably.
5. Bridge decks will be kept free of soil.
6. Equipment bridges will consist of one of the following: Clean rock placed over flume pipes; prefabricated construction mats; rail flat cars placed over the waterbody with or without a culvert; or flexi-float or other temporary bridging, such as bailey bridges.
7. Remove equipment bridges and associated material as soon as possible following permanent seeding and final restoration of the ROW. Restore and stabilize bed and banks to approximate pre-construction conditions.
8. Dispose of any rock as directed by company representative.
9. Contractor shall comply with all conditions as required by applicable permits.
10. Bridges are not required on dry washes.

For environmental review purposes only.

ENTREGA
GAS PIPELINE INC.

Notes for Bridge Detail Figure 1

DATE:	3/12/2003
REVISED:	12/21/2004
SCALE:	NTS
DRAWN BY:	KMK6792
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APPENDIX G

ENTREGA'S SITE-SPECIFIC CONSTRUCTION AND REVEGETATION PLAN FOR RIPARIAN WOODLAND COMMUNITIES

Site-Specific Construction and Revegetation Plan for Riparian Woodland Communities Crossed by the Entrega Gas Pipeline Project

Entrega Gas Pipeline Inc. (Entrega) has developed this site-specific plan to identify existing locations of riparian woodland communities along the project route, mitigation measures to minimize construction through these areas, and measures to maximize revegetation potential within riparian woodland communities.

Existing Environment

Entrega completed mapping of the general vegetation communities along the proposed project route by conducting a desktop review of 2003 aerial photographs, an aerial flyover, and limited ground-truthing of some community types. Riparian woodland was included in the mapping effort as a distinct vegetation community. Common species found within riparian woodlands typically include narrowleaf cottonwood (*Populus angustifolia*), various species of willow (*Salix* spp.), thinleaf alder (*Alnus incana* spp. *tenuifolia*), river birch (*Betula occidentalis*), red-osier dogwood (*Cornus sericea*), aspen (*Populus tremuloides*), wild rose (*Rosa* spp.), serviceberry (*Amelanchier alnifolia*), snowberry (*Symphoricarpos* spp.), and Rocky Mountain maple (*Acer glabrum*).

Based on the general vegetation community mapping, riparian woodlands occupy about 0.7 mile of the proposed Entrega Gas Pipeline route at various locations between mileposts (MPs) 225.2 and 237.8, and on an island located in the middle of the North Platte River at about MP 192.8. In addition, temporary use areas located at MPs 225.4 and 225.5 are located within riparian woodland communities. The temporary use area located at MP 237.7 was originally located partially within a riparian woodland; however, Entrega will modify the size and/or shift the location of this temporary use area to avoid the riparian woodland community.

Construction Impacts and Mitigation

The primary impact of the proposed project on riparian woodland communities will be the cutting, clearing, and/or removal of existing vegetation within the construction work area. Entrega will use industry standards and proven technology as identified in its Upland Erosion Control, Revegetation, and Maintenance Plan (Plan) and Wetland and Waterbody Construction and Mitigation Procedures (Procedures), with approved variances, for site stabilization and vegetation restoration in areas disturbed by construction. Entrega's Plan and Procedures are included as appendices 1C and 1D, respectively, of its Environmental Resource Report 1 filed with the FERC on September 17, 2004. Additionally, Entrega will implement a Construction Mitigation and Reclamation (CM&R) Plan developed as Section 2 of its Plan of Development (POD) in support of obtaining a Right-of-Way Grant from the Bureau of Land Management (BLM). The CM&R Plan identifies the construction mitigation and reclamation measures that Entrega will implement to minimize impacts on environmental resources and promote successful reclamation of those resources affected by the project.

Entrega has attempted to locate the Entrega Gas Pipeline adjacent to existing pipeline corridors within riparian woodland communities. These existing corridors are currently maintained in an herbaceous state by periodic mowing or brush clearing, therefore, impacts resulting from construction of the Entrega Gas Pipeline will result in incremental and minimal effects on riparian woodland habitat.

To further minimize impacts on riparian woodland vegetation during construction, Entrega will:

- reduce the width of the construction right-of-way from over 100 feet to 75 feet in riparian woodland areas;
- avoid the removal of trees located within these areas to the maximum extent practical;
- leave the root systems of small woody vegetation intact along the construction right-of-way by mowing or crushing vegetation in these areas, if blading is not required to level the right-of-way to create a safe work area; and,
- avoid the siting of staging or temporary use areas in woody riparian areas to the maximum extent practical.

Further, Entrega will implement the following reclamation measures during construction to maximize the restoration potential:

- preservation of topsoil, native seed sources, and root stock; and
- preparation of an adequate seedbed, including decompaction.

Construction of the Entrega Gas Pipeline will involve short-term impacts on approximately 6.2 acres of riparian woodlands within the construction right-of-way. Temporary impacts on riparian woodland communities crossed by the pipeline are included in table 1.

TABLE 1
Milepost Ranges of Riparian Woodland Community Crossed

Beginning Milepost	Ending Milepost	Length (feet)	Temporary Impact (acres) [a/]	Permanent Impact (acres) [b/]
192.80	192.84	220.00	0.38	0.21
225.21	225.22	40.34	0.07	0.05
225.26	225.59	1752.89	3.02	1.97
235.59	235.61	98.09	0.17	0.07
237.29	237.50	1082.32	1.86	1.22
237.76	237.84	412.84	0.71	0.43
	Total	**3,606.48**	**6.21**	**3.95**

[a/] Based on a 75-foot-wide construction right-of-way.
[b/] Based on a 10-foot-wide permanent right-of-way within 25 feet of waterbodies and a 50-foot-wide permanent right-of-way elsewhere, maintained in an herbaceous state.

In addition to the construction right-of-way, additional temporary use areas located at MPs 225.4 and 225.5 will impact 0.34 and 0.40 acres, respectively, of riparian woodland community. Therefore, construction of the project will result in a total of approximately 6.9 acres of temporary impacts on riparian woodlands.

Specifically, the area between MPs 192.80 and 192.84 represents the North Platte River. Based on aerial alignments, riparian woodlands extend approximately 220 feet on the island in the middle of the river along the construction right-of-way. The area between MPs 225.21 and 225.22 and the area between MPs 225.26 and 225.59 are associated with the Medicine Bow River. Based on aerial alignments, riparian woodlands extend approximately 193 feet east of the river and approximately 1,600 feet west of the river along the construction right-of-way. The area between MPs 235.59 and 235.61 is associated with a tributary to Foote

Creek, with riparian woodlands extending approximately 50 feet on either side of the tributary. The area between MPs 237.29 and 237.50 represents Rock Creek. Based on aerial alignments, riparian woodlands extend approximately 1,083 feet west of the second crossing of the river. The area between MP 237.76 and 237.84 is associated with One Mile Creek. Based on aerial alignments, riparian woodlands extend approximately 212 feet east of the river and approximately 200 feet west of the river along the construction right-of-way.

Post-Construction and Revegetation

Upon completion of construction, Entrega will restore, revegetate, and permanently maintain a 50-foot-wide corridor along the majority of its pipeline route in compliance with Entrega's Plan and Procedures and Entrega's CM&R Plan. The permanent right-of-way will be maintained to support primarily herbaceous or shrub dominated communities. In woody riparian areas, however, Entrega will reduce permanent impacts to riparian woodland by reducing the permanently maintained right-of-way to a 10-foot-wide corridor centered over the pipeline. Entrega will also reseed, plant, and/or allow for natural revegetation in the area disturbed by construction with tree and shrub species of similar type, diversity, and density.

Entrega will reduce permanent impacts to riparian woodland by limiting vegetation maintenance to allow a riparian strip at least 25 feet wide, as measured from the waterbody's mean high water mark, to permanently revegetate with native plant species across the entire construction right-of-way in accordance with section V.D.1 of its Procedures. Entrega will maintain a reduced, 10-foot-wide corridor centered over the pipeline in riparian woody areas in an herbaceous state, also in accordance with section V.D.1 of its Procedures. Therefore, permanent impacts to riparian woodland vegetation will be limited to land cleared of woody species along the permanently maintained right-of-way, which includes about 3.95 acres, as identified in table 1. If conditions require, trees within 15 feet of the pipeline centerline that are greater than 15 feet in height may be selectively cut and removed from the right-of-way on an as-needed basis, not to exceed once every 3 years. Entrega will only use mechanical mowing or cutting along its right-of-way for normal vegetative maintenance. However, in those areas where the pipeline will parallel or be within adjacent rights-of-way, alternate means of vegetative maintenance may be used by the owner(s) of those areas. No herbicides or pesticides will be used within 100 feet of a waterbody.

To maximize the revegetation potential during restoration, Entrega will use seed mixtures compatible to the native vegetative community and soil conditions, and carefully monitor the seeding rate. Entrega is in the process of consulting with the BLM, Rawlins Field Office, the Natural Resource Conservation Service, and the landowners of the properties containing riparian woodlands to develop seed mixes for reseeding in riparian woodland areas. Initial conversations with the BLM, Rawlins Field Office, identified species and/or soil conditions occurring at the North Platte, Medicine Bow, and Rock Creek crossings, and indicated that reseeding with site-specific species may be appropriate. Species occurring in the riparian woodlands at the crossing of the North Platte River may include Kentucky bluegrass, clover, red top, Nebraska sedge, smooth brome, or Timothy grass. Species occurring at the Medicine Bow River may include Timothy, Garrison, smooth brome, or orchard grasses. The BLM indicated that the soils at Rock Creek are so coarse that Entrega's upland seed mix would likely be appropriate for reseeding. Entrega will continue to work the land management agencies and landowners to develop seed mixes appropriate to the woody riparian areas.

In addition to reseeding with woody riparian seed mixes and where required by permit conditions, tree cuttings, containerized plants, or transplants, will be used to restore woody plant

communities, stabilize riparian areas, and provide a visual screens to conceal the right-of-way. Entrega will plant fast growing species such as willow, cottonwood, or aspen. Willow species will be planted as non-rooted cuttings, while cottonwood species will be planted as rooted cuttings. Tree cuttings will be obtained from adjacent areas within the surveyed corridor that are identified and approved by the appropriate land-management agency. Locally obtained tree cuttings will be used to ensure that plants are adaptable to the environment. Tree cuttings will be between 16 and 24 inches long, obtained during the dormant season (February to May), and planted within two weeks of cutting or stored under refrigeration until needed. Willow and aspen cuttings will be spaced with an average of 10 feet-on-center and cottonwoods will be spaced as 15 feet-on-center. Plantings will be randomly placed to promote a natural distribution, but the recommended average plant density will be maintained. Species will not be planted within 10 feet of either side of the pipeline. Tree cuttings will be inserted into the ground approximately 6 inches and will be covered with a fine plastic netting to deter browsing.

Natural growth will restore the unmaintained portions of the temporary construction right-of-way and temporary use areas back to a riparian woodland community. The rate of shrub and tree reestablishment within the riparian woodland communities will depend upon the species seeded or planted, the amount of precipitation, the length of growing season, and the natural fertility of the soils. Native shrub species associated with riparian woodlands crossed by the project have moderate to fast growing rates and include species such as serviceberry, snowberry, red-osier dogwood, wild rose, and some species of willow. It is anticipated that riparian shrub species will be reestablished within 3 years following construction. Native tree species associated with riparian woodlands crossed by the project include thinleaf alder, river birch, Rocky Mountain maple, cottonwood, aspen, and some species of willow. It is anticipated that saplings will be reestablished between 15 and 30 years following construction and mature trees will be reestablished between 50 and 70 years following construction.

APPENDIX H

ENTREGA'S IRRIGATION SYSTEM REPAIR AND MONITORING PLAN

Entrega Gas Pipeline
Irrigation System Repair and Monitoring Plan

Entrega Gas Pipeline Inc. (Entrega) has prepared this Irrigation System Repair and Monitoring Plan to establish procedures to identify, mark, and record location information of irrigation systems affected by pipeline construction, and to identify and describe procedures for the maintenance of irrigation systems during construction and the repair of irrigation systems following construction.

Implementation Plan References, Documentation, and Training

Entrega and its contractors and subcontractors will comply with conditions listed in the Federal Energy Regulatory Commission (FERC) Certificate (*e.g.*, Entrega's Upland Erosion Control, Revegetation, and Maintenance Plan (Plan), section IV.D.) and landowner agreements.

The Plan and easement requirements (identified in the line list) will be retained at Entrega's field offices, contractor yards, and by Entrega's Environmental Inspectors during construction of the project.

Entrega will include the irrigation system maintenance and repair procedures as a component of the environmental training program for the project. Entrega personnel, Chief Inspector, craft inspectors, contractor and subcontractor employees, and other individuals involved with construction of the pipeline will participate in this training program. Additional training pertaining specifically to irrigation system maintenance and repair will be provided to Craft Inspectors overseeing trenching and irrigation repair activities.

Identification of Existing Irrigation Systems

The majority of irrigation that has been encountered to date are surface irrigations. Prior to construction, Entrega will identify landowners and tenants who have active surface or below ground irrigation systems and actively irrigated lands crossed by the pipeline by using information obtained from the following sources.

Landowner Consultations and Line Lists

Direct contact between Entrega's Right-of-Way Agents and landowners and/or tenants and subsequent easement agreements will provide locations, types, and descriptions of the irrigation systems and irrigated lands affected by construction.

Field Surveys

Entrega has conducted preconstruction surveys along the project route and compiled a preliminary list of irrigation systems that will be crossed by the pipeline route. A table of the identified irrigation systems by milepost is included in attachment A. Following consultations with the landowners to determine which systems are actively being used for irrigating lands and the type of irrigation that is occurring, Entrega will conduct detailed pre-construction topographic surveys (*e.g.*, 1-foot contours or less) of the right-of-way and any temporary use areas associated with the flood-irrigated areas to document preconstruction conditions and for use in addressing post-construction restoration. The surveys will cover an area wider than the proposed construction corridor to provide sufficient topographic coverage to ensure proper restoration of slope gradients crossed by the pipeline route.

Information obtained from landowners and field observations will be compiled into a master list of irrigation systems and irrigated lands crossed by the pipeline route. Prior to construction, the Field Construction Project Manager or Chief Inspector will distribute the master list identifying the irrigation systems crossed by tract number and landowner's and/or tenant's name(s) to the craft inspectors, Right-of-Way Agents, Environmental Inspectors, and the contractor. In addition, the location of irrigated lands will be indicated on the project alignment sheets (either in the land use bar or as part of the environmental bar information). This information will alert construction crews to the presence of irrigation systems so that the contractor and crews can make preparations for maintaining water flow during construction (if required).

Marking (Flagging) and Documenting Irrigation Systems

Prior to construction, the locations of active irrigation systems will be marked to alert construction crews. The Trenching Inspector, or equivalent, will contact the Environmental Inspector and the survey crew to record station numbers for the irrigation lines. Irrigation line markers will be placed along the side of the right-of-way and will remain in place throughout construction.

Maintaining Flow of Irrigation Systems

For surface irrigation, Entrega will need to temporarily interrupt flow. Entrega will coordinate with the landowners and/or tenants affected by project activities for this temporary impact. It is anticipated that for below ground irrigation systems, Entrega will maintain flow during construction. Flow will be maintained by crossing irrigation ditches in accordance with Entrega's Wetland and Waterbody Construction and Mitigation Procedures (Procedures). Entrega will also restore all irrigation ditches in accordance with its Procedures. The method used to cross each irrigation system will be dependent on the type of system, its activity, and the requirements of downstream users; however, the majority of irrigation ditches will be crossed using the open-cut crossing method.

The open-cut crossing method will involve trenching through the irrigation ditch while water continues to flow through the trenching area. The open-cut crossing method includes:

- fabrication of pipe segments for the crossing in adjacent additional temporary workspace areas, prior to initiating construction across the irrigation ditch;
- excavation of a trench in the flowing irrigation ditch by backhoes or draglines;
- placement of spoil excavated from the trench a minimum of 10 feet from the edge of the ditch for temporary storage, where possible;
- installation of sediment barriers where necessary to prevent sediment and excavated spoil from entering the water;
- placement of earthen trench plugs on both banks of the irrigation ditch until immediately before pipe installation to separate the irrigation ditch trench from the upland trench, to prevent water from being diverted into the upland portions of the pipeline trench, and to keep muddy water that accumulates in the upland trench from flowing into the irrigation ditch;
- installation of the prefabricated segment of pipe in the trench following excavation;
- backfilling of the trench with native streambed spoil; and,
- completion of all in-stream work within 24 hours.

Irrigation System Repairs and Documentation

Entrega will repair disrupted irrigation systems as soon as possible and will compensate the landowner for damages and lost crop production resulting from irrigation system interruptions due to the construction of the project. Entrega will include this language as a special right-of-way stipulation in the construction contract. Repair procedures will vary depending on the irrigation system involved. Disturbed drainage furrows, water piping, or heads will be restored, repaired, or replaced as soon as possible and monitored for problems after construction is complete. In addition, Entrega will take extra precautions when backfilling the pipeline trench in irrigated areas to reduce the potential for trench subsidence. Irrigation system markers will not be removed until all necessary repairs have been inspected and approved by Entrega's inspectors and the landowner/tenant.

Restoration procedures will vary depending on the type of irrigation system crossed. As part of restoration of the right-of-way, additional survey controls will be implemented in irrigated areas to restore the surface to more precise elevations. In addition, Entrega will communicate with the landowners or tenants following construction and restoration to ensure that irrigation systems are functioning properly. Additional repair or remedial work will be performed if requested by the landowner. Impacts and mitigation will be site-specific and based on agreements and/or easement conditions with the affected landowner or tenants. Based on negotiations between the landowner and Entrega, mitigation may include additional compensation for portions of fields that may be taken out of production for all or part of the season. Entrega will also conduct a topographic survey either during final grading or post-grading to verify that the grade has been restored to preconstruction conditions based on the preconstruction field surveys discussed above.

During the easement negotiation process, Entrega and a landowner(s) may agree that the landowner will conduct final grading of his/her fields with compensation from Entrega. In this case, Entrega will conduct post-construction monitoring of the irrigated area and coordinate with the landowner and provide additional compensation if additional restoration is required.

ATTACHMENT A

Preliminary Survey Information on Irrigation Systems Along the Entrega Gas Pipeline Route

Milepost Location	Unique ID	Date Surveyed	Vegetation Community
0.2	WB 0.2	9/15/04	Hayfield
0.3	WB 0.7	5/12/04	Hayfield
0.7	WB 1.1	5/12/04	Hayfield
0.9	WB 1.4	5/12/04	Hayfield
1.6	WB 2.2	5/18/04	Hayfield
2.3	WB 2.3	9/15/04	Sage Scrub
2.6	WB 3.15a	5/13/04	Hayfield
2.6	WB 3.15b	5/13/04	Hayfield
2.8	WB 3.3	5/13/04	Hayfield
3.1	WB 3.7	5/17/04	Hayfield
3.4	WB 3.4	9/15/04	Hayfield
3.8	WB 4.4-01	5/18/04	Hayfield
3.8	WB 4.4-02	5/18/04	Hayfield
4.0	WB 4.7	5/18/04	Hayfield
4.2	WB 4.8	5/18/04	Hayfield
4.2	WB 4.9	5/18/04	Hayfield
4.5	WB 5.1	5/18/04	Hayfield
4.7	WB 5.3	5/18/04	Hayfield
4.8	WB 5.4	5/18/04	Hayfield
4.8	WB 5.5	5/18/04	Hayfield
4.9	WB 5.6	5/18/04	Hayfield
7.1	WB 7.7	5/18/04	Hayfield
7.2	WB 7.72	5/24/04	Hayfield
7.4	WB 7.9	5/24/04	Hayfield
7.5	WB 8.0	5/24/04	Hayfield
8.7	WB 9.35	5/27/04	Hayfield
9.0	WB 9.61	5/25/04	Hayfield
10.5	WB 11	6/02/04	Sage Scrub
11.0	WB 11	6/02/04	Sage Scrub
12.8	WB 13.3	6/02/04	Sage Scrub
14.0	WB 14.5	6/03/04	Sage Scrub
14.8	WB 15.4	6/03/04	Hayfield
14.8	WB 15.4-02	6/03/04	Hayfield
15.0	WB 15.6-02	6/03/04	Hayfield
29.5	WB 30.1	6/01/04	Hayfield
30.2	WB 30.8	6/01/04	Hayfield
30.4	WB 31.1	6/01/04	Hayfield
31.0	WB 31.7	6/01/04	Hayfield
31.1	WB 32	6/01/04	Hayfield
31.3	WB 32	6/09/04	Hayfield
49.7	WB 50.3	6/11/04	Hayfield
50.1	WB 50.81	6/11/04	Sage Steppe
50.4	WB 50.42a	9/13/04	Hayfield
50.4	WB 50.42b	9/13/04	Hayfield

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ATTACHMENT A

Preliminary Survey Information on Irrigation Systems Along the Entrega Gas Pipeline Route

Milepost Location	Unique ID	Date Surveyed	Vegetation Community
50.4	WB 50.42c	9/13/04	Hayfield
50.4	WB 50.42d	9/13/04	Hayfield
50.4	WB 50.42e	9/13/04	Hayfield
50.6	WB 51.1	6/11/04	Sage Steppe
50.6	WB 51.11	6/14/04	Sage Steppe
176.8	WB 177.3	8/05/04	Sage Scrub
223.2	WB 223.7	8/03/04	Sage Scrub
225.2	WB 225.75	8/04/04	Sage Scrub
225.7	WB 226.23	8/04/04	Hayfield
225.8	WB 226.33	8/04/04	Hayfield
235.2	WB 235.76	7/28/04	Riparian Wetland
238.2	WB 238.85	7/08/04	Sage Steppe
238.2	WB 239.3	7/08/04	Sage Steppe
240.0	WB 240.58	7/08/04	Riparian Wetland
243.5	WB 244	7/01/04	Sage Steppe
243.7	WB 244.18	7/01/04	Sage Steppe
243.7	WB 244.25	7/01/04	Sage Steppe
243.8	WB 244.45	7/01/04	Sage Steppe
244.1	WB 244.6	7/01/04	Sage Steppe
244.1	WB 244.63	7/01/04	Sage Steppe
246.1	WB 244.64	6/30/04	Hayfield
246.1	WB 244.65	6/30/04	Hayfield
246.4	WB 246.89	6/30/04	Riparian Wetland
246.6	WB 247.13	6/30/04	Sage Steppe
247.6	WB 247.62	8/25/04	Sage Steppe
247.6	WB 247.65	8/25/04	Sage Steppe
249.9	WB 249.93	8/25/04	Sage Steppe
250.4	WB 250.42	8/26/04	Sage Steppe
252.0	WB 252	8/26/04	Hayfield
252.6	WB 252.58	8/26/04	Hayfield
259.6	WB 260.1	6/29/04	Sage Steppe
260.1	WB 260.77	7/12/04	Sage Steppe
260.4	WB 259.9	7/12/04	Hayfield
260.5	WB 261.03	7/12/04	Hayfield
260.8	WB 261.3	7/12/04	Hayfield
261.0	WB 261.6	7/12/04	Hayfield
261.6	WB 262.1	7/12/04	Hayfield
261.9	WB 262.47	7/12/04	Hayfield
262.3	WB 262.9	7/06/04	Hayfield
262.6	WB 263.08	6/28/04	Sage Steppe
262.7	WB 263.22	6/28/04	Sage Steppe
262.8	WB 263.35	6/28/04	Sage Steppe
263.0	WB 263.5	6/28/04	Sage Steppe
263.0	WB 263.55	6/28/04	Sage Steppe
264.1	WB 264.6	6/28/04	Sage Steppe

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ATTACHMENT A

Preliminary Survey Information on Irrigation Systems Along the Entrega Gas Pipeline Route

Milepost Location	Unique ID	Date Surveyed	Vegetation Community
264.4	WB 264.9	6/28/04	Sage Steppe
265.2	WB 265.8	6/28/04	Riparian Wetland
265.6	WB 266.1	6/28/04	Mixed Prairie
272.7	WB 273.2	6/25/04	Mixed Prairie
273.2	WB 273.7	6/25/04	Mixed Prairie
273.8	WB 274.25	6/25/04	Mixed Prairie
274.5	WB 275.02	6/25/04	Riparian Wetland
274.5	WB 275.05	6/25/04	Riparian Wetland
274.7	WB 275.18	6/25/04	Riparian Wetland
274.7	WB 275.2	6/25/04	Riparian Wetland
274.8	WB 275.4	6/25/04	Riparian Wetland
275.0	WB 275.46	6/25/04	Riparian Wetland
275.0	WB 275.5	6/25/04	Riparian Wetland
304.3	WB 304.8	6/22/04	Hayfield

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APPENDIX I

ENTREGA'S HYDROSTATIC TEST PLAN

Entrega Gas Pipeline Project
Hydrostatic Test Plan

SUMMARY

Entrega Gas Pipeline (Entrega) will test its proposed 327 mile pipeline in accordance with regulations set forth by the USDOT in 49 CFR 192. This process involves filling segments of the pipeline with water, pressuring the section commensurate with the maximum allowable operating pressure and class location, and then maintaining that pressure for a period of 8 hours.

Entrega has identified several potential water sources and has been in consultation with various agencies regarding the use of this water. Entrega will continue these consultations including those with the U.S. Fish and Wildlife Service (USFWS) regarding water depletion and potential downstream impacts on threatened or endangered species if hydrostatic test water is removed from sensitive water resources.

Hydrostatic testing of the pipeline will begin with filling the pipe section with water. When water is appropriated from surface waters, pumps will be placed near the riverbanks; Entrega will follow mitigation measures outlined in its Spill Prevention, Containment and Countermeasure Plan (Bureau of Land Management (BLM) Plan of Development (POD), appendix C) when placing the pumps within 100 feet of a surface water. No biological or chemical constituents will be added to the hydrostatic test water.

The water will be withdrawn through a hose with a screened intake to prevent entrainment of fish or other solids (see attached figure "In-Stream Protection for Caged Pump or Suction Hose Inlet"). The hose will be suspended within a screened cage constructed of approximately 2-inch mesh wire or other material with similar screen size (or smaller if deemed necessary by the USFWS) to prevent the entrapment of aquatic species. The screened cage will have a minimum dimension of 2-feet by 4-feet, and will occupy an area of sufficient size to accommodate enough water to meet the intake pump specified suction rating. The suction inlet will be suspended at least one foot above the river bottom to prevent disturbance to the streambed. Intake rates and screen size may need to be adjusted to protect aquatic life, provide for waterbody uses, and provide for downstream withdrawals of water by existing users.

Once the pipe has been filled, the line will be pressurized. After testing is completed, the line will be depressurized and the water discharged to an upland location near the surface water from which it was appropriated, and allowed to flow back into the waterbody. The discharge will be completed using displacement pigs or spheres propelled by dry, compressed air. The rate of discharge will be controlled to minimize erosion and sediment transport and will be in accordance with NPDES permit requirements.

TESTING PLAN

Segment 1: 135 miles of 36-inch Diameter Pipe

Section 1: 31.5 Miles, 8.3 million gallons

- The fill point on the pipeline will be at approximately MP 14.8, south of the White River (see attached map "Hydrostatic Test Withdrawal and Discharge Locations - White River, Rio Blanco County, CO").
- Water withdrawal from the White River will begin on about September 10, 2005, and the section will be filled within approximately 48 to 60 hours of initial withdrawal.
- The line section will be immediately pressurized to the required pressure upon filling and then held for the required 8 hour duration.
- Upon satisfactory completion of the test, a portion of the water required for testing of section 2 will be transferred to that section.
- The remaining water that was not transferred will be sampled for criteria established in the NPDES permit issued for discharges and will be discharged as permitted back to the source.

Section 2: 9.0 Miles, 2.4 million gallons

- The fill point on the pipeline will be at approximately MP 31.0, via transfer of water from section 1.
- Water transfer from section 1 will begin on about September 14, 2005, and the section will be filled within approximately 12 to 24 hours.
- The line section will be immediately pressurized to the required pressure upon filling and then held under this pressure for the required 8 hour duration.
- Upon satisfactory completion of the test, the test water will be returned to section 1.
- The test water will be sampled for regulated constituents in accordance with NPDES permit requirements and then discharged back to the source.

Total water appropriated from the **White River** will be approximately 8.3 million gallons. About 5.9 million gallons will be required for approximately 7 days. The remaining 2.4 millions gallons will be required for approximately 10 days.

The maximum targeted withdrawal rate is 5,000 gallons per minute (GPM) which is approximately 4.3% of the average daily flow for this river based on data from 1999 through 2003 for the months of August and September.

No permit is required to withdraw water from the White River as flow depletion would be limited. A discharge permit will be required from the CDPHE.

Section 3: 23.0 Miles, 6.1 million gallons

- The fill point on the pipeline will be at approximately MP 50.6, north of the Yampa River (see attached map "Hydrostatic Test Withdrawal and Discharge Locations - Yampa River, Moffat County, CO").
- Water withdrawal from the Yampa River will begin on about September 1, 2005, and the section will be filled within approximately 36 to 48 hours of initial withdrawal.
- The line section will be immediately pressurized to the required pressure upon filling and then held for the required 8 hour duration.

- Upon satisfactory completion of the test, water samples will be collected for constituent analysis as required in the NPDES permit issued for this discharge and then discharged back to the source.

Total water appropriated from the **Yampa River** will be approximately 6.1 million gallons which will be required for approximately 6 days.

The maximum targeted withdrawal rate is 3,000 GPM which is approximately 4.6% of the average daily flow for this river based on data from 1999 through 2003 for the months of August and September.

No permit is required to withdraw water from the Yampa River as flow depletion would be limited. A discharge permit will be required from the CDPHE.

Section 4: 20.6 Miles, 5.5 million gallons

- The fill point on the pipeline will be at approximately MP 83.6, via transfer of water from section 5.
- Water transfer from section 6 through section 5 will begin on about September 13, 2005, and the section will be filled within approximately 72 to 108 hours.
- The line section will be immediately pressurized upon filling to the required pressure and then held for the required 8 hour duration.
- Upon satisfactory completion of the test, the test water will be returned to section 5.
- The test water will be sampled for regulated constituents in accordance with NPDES permit requirements and then discharged back to the source.

Section 5: 5.9 Miles, 1.6 million gallons

- The fill point on the pipeline will be at approximately MP 89.5, via transfer from section 6.
- Water withdraw from the Little Snake River will begin on about September 1, 2005 and the section will be filled within approximately 24 to 36 hours.
- The line section will be immediately pressurized to the required pressure upon filling then held for the required 8 hour duration.
- Upon satisfactory completion of the test, water samples will be collected for constituent analysis as required in the NPDES permit issued for this discharge and the test water will be transferred along with additional water from the Little Snake River to section 6.

Section 6: 46.0 Miles, 12.2 million gallons

- The fill point on the pipeline will be at approximately MP 89.5 via transfer from section 5. Water will be appropriated via section 4 from approximately MP 84.0, south of the Little Snake River (see attached map "Hydrostatic Test Withdrawal and Discharge Locations - Little Snake River, Moffat County, CO").
- Water transfer from section 5 will begin on about September 1, 2005 and will be filled within approximately 96 to 120 hours.
- The line section will be immediately pressurized to the required pressure upon filling then held for the required 8 hour duration.
- Upon satisfactory completion of the test, the test water will be transferred back to section 4 via section 5 for testing.
- The test water will be sampled for regulated constituents in accordance with NPDES permit requirements and then discharged back to the source.

Total water appropriated from the **Little Snake River** will be approximately 12.2 million gallons. About 1.6 million gallons will be required for approximately 16 days. About 5.1 million gallons will be required for approximately 12 days. The remaining 5.5 millions gallons will be required for approximately 19 days.

The maximum targeted withdrawal rate is 1,500 GPM which is approximately 10.3% of the average daily flow for this river based on data from 1999 through 2003 for the months of August and September.

No permit is required to withdraw water from the Little Snake River as flow depletion would be limited. A discharge permit will be required from the CDPHE.

Segment 2: 192 miles of 42-inch Diameter Pipe

Section 7: 82.5 Miles, 29.6 million gallons

- The fill point on the pipeline will be at approximately MP 193.0, east of the North Platte River (see attached map "Hydrostatic Test Withdrawal and Discharge Locations - North Platte River, Carbon County, WY").
- Water withdrawal from the North Platte River will begin on about October 10, 2005, and the section will be filled within approximately 72 to 96 hours.
- The line section will be immediately pressurized to the required pressure upon filling then held for the required 8 hour duration.
- Upon satisfactory completion of the test, the required volume of test water will be transferred to sections 8a and 8b for testing.
- Water samples will be collected for constituent analysis as required in the NPDES permit issued for this discharge.
- The test water will then be discharged back to the source.

Total water appropriated from the **North Platte River** will be approximately 29.6 million gallons. About 9.9 million gallons will be needed for 6 days; 14.3 million gallons for 15 days; and 5.4 million gallons for 27 days.

The maximum targeted withdrawal rate is 5,000 GPM which is approximately 4.5% of the average daily flow for this river based on data from 1999 through 2003 for the months of August and September.

No permit is required to withdraw water from the North Platte River. The Bureau of Reclamation (BOR) has water rights on the North Platte for the Glendo Reservoir and has agreed to sell up to 32.1 million gallons of water to Entrega for testing. The BOR considers this water 100% consumptive. Discharge permits will be required from the WYDEQ and CDPHE, depending on the location of discharges.

Section 8a: 14.0 Miles, 5.1 million gallons

- The fill point on the pipeline will be at approximately MP 218.0, via transfer from section 7.
- Water transfer from section 7 will begin on about October 16, 2005, and the section will be filled within approximately 48 to 72 hours.

- The line section will be immediately pressurized upon filling to the required pressure then held for the required 8 hour duration.
- Upon satisfactory completion of the test, the test water will be transferred to section 8b.

Section 8b: 55.0 Miles, 19.7 million gallons

- The fill point on the pipeline will be at approximately MP 232.0, via transfer from section 8a.
- Water transfer from section 8a will begin on about October 21, 2005, and the section will be filled within approximately 36 to 48 hours.
- The line section will be immediately pressurized upon filling to the required pressure then held for the required 8 hour duration.
- Upon satisfactory completion of the test, the required volume of test water will be transferred to section 9 for testing.
- The remaining water volume that was not transferred will be sampled and tested for constituent analysis then discharge as permitted back to the source.

Section 9: 15.0 Miles, 5.4 million gallons

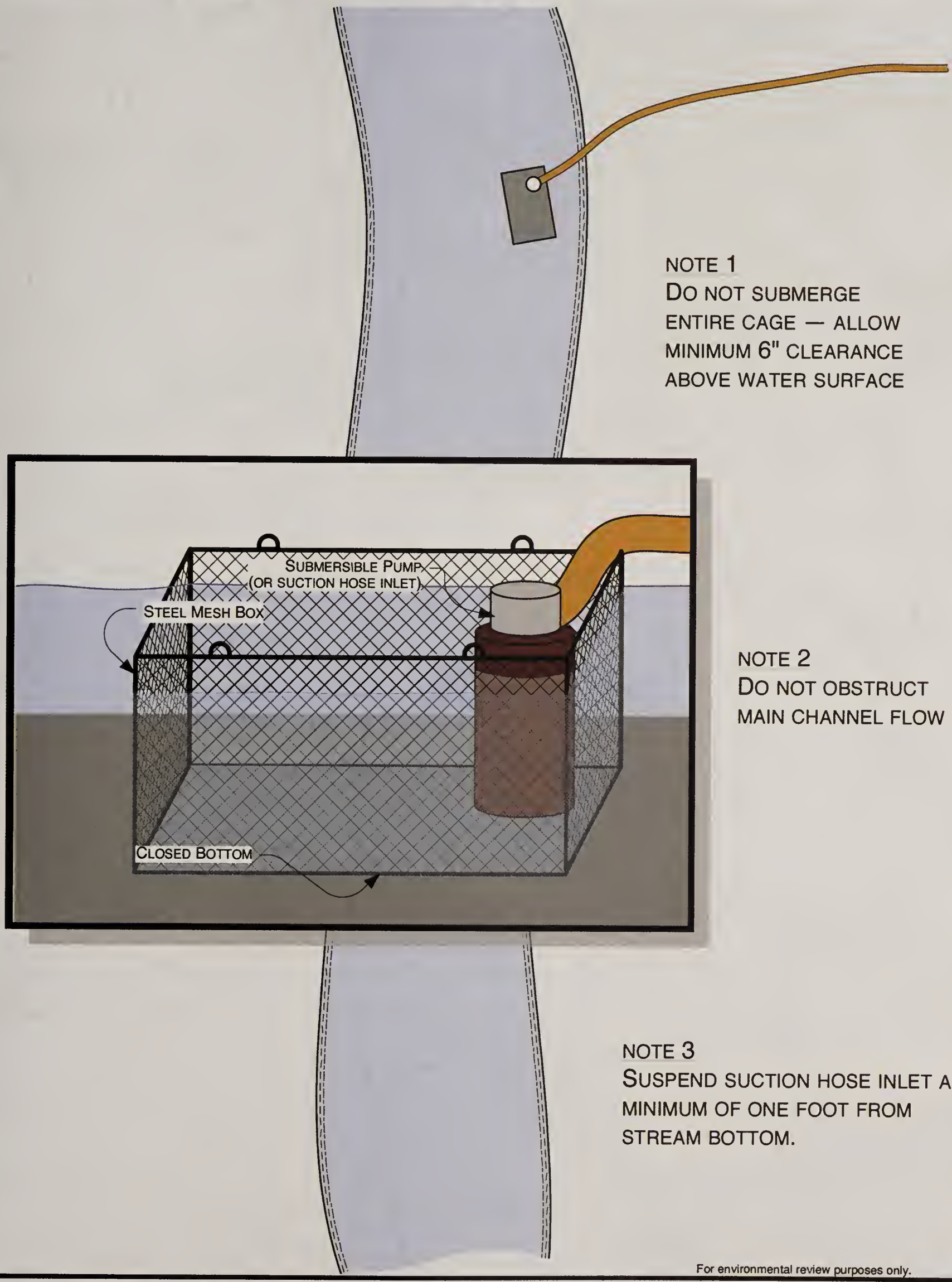
- The fill point on the pipeline will be at approximately MP 287.0, via transfer from section 8b.
- Water transfer from section 8b will begin on about October 25, 2005, and the section will be filled within approximately 36 to 48 hours.
- The line section will be immediately pressurized to the required pressure upon filling then held for the required 8 hour duration.
- Upon satisfactory completion of the test, the required volume of test water will be transferred to section 10 for testing. The remaining volume will be held for use in testing section 11.

Section 10: 11.0 Miles, 4.0 million gallons

- The fill point on the pipeline will be at about MP 302.0, via transfer from section 9.
- Water transfer from section 9 will begin on about October 29, 2005, and the section will be filled within approximately 36 to 48 hours.
- The line section will be immediately pressurized to the required pressure upon filling then held for the required 8 hour duration.
- Upon satisfactory completion of the test, the required volume of test water plus the additional volume required from section 9 will be transferred to section 11 for testing.

Section 11: 14.0 Miles, 5.1 million gallons

- The fill point on the pipeline will be at approximately MP 313.0, via transfer from section 10.
- Water transfer from section 10 will begin on about November 3, 2005, and the section will be filled within approximately 96 to 108 hours.
- The line section will be immediately pressurized to the required pressure upon filling then held for the required 8 hour duration.
- Upon satisfactory completion of the test, the water will be returned through sections 10 and 9 to section 8b.
- The water will be sampled for constituent analysis then discharge as permitted back to the source.



NOTE 1
DO NOT SUBMERGE ENTIRE CAGE — ALLOW MINIMUM 6" CLEARANCE ABOVE WATER SURFACE

NOTE 2
DO NOT OBSTRUCT MAIN CHANNEL FLOW

NOTE 3
SUSPEND SUCTION HOSE INLET A MINIMUM OF ONE FOOT FROM STREAM BOTTOM.

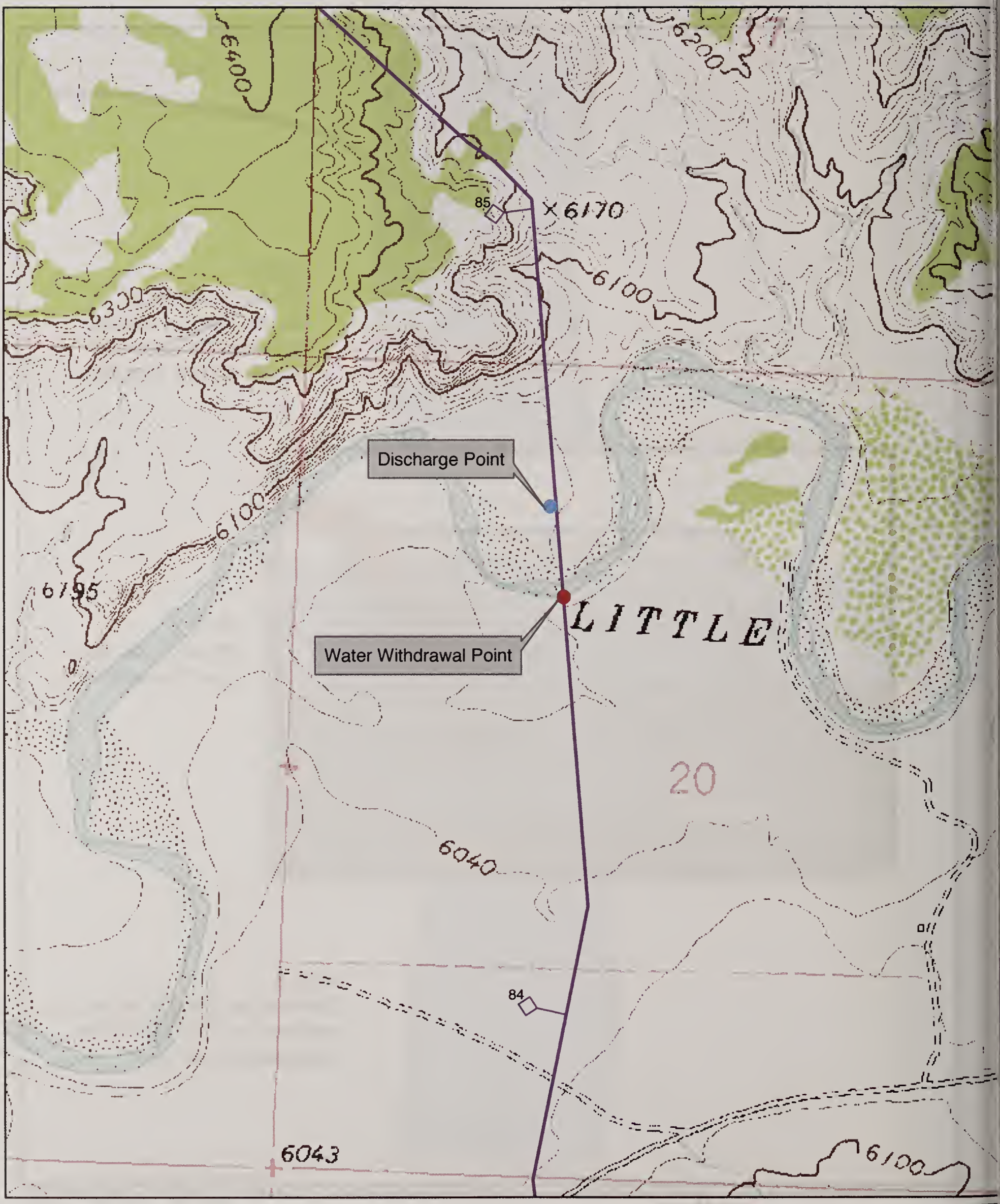
For environmental review purposes only.

ENTREGA
GAS PIPELINE INC.

In-Stream Protection for Caged Pump or Suction Hose Inlet
HDD Water Supply & Hydrostatic Testing

DATE:	12/5/2003
REVISED:	11/24/04
SCALE:	NTS
DRAWN BY:	KMK6792
	K:\366\060\CAGED PUMP.VSD

NATURAL RESOURCE GROUP, INC.



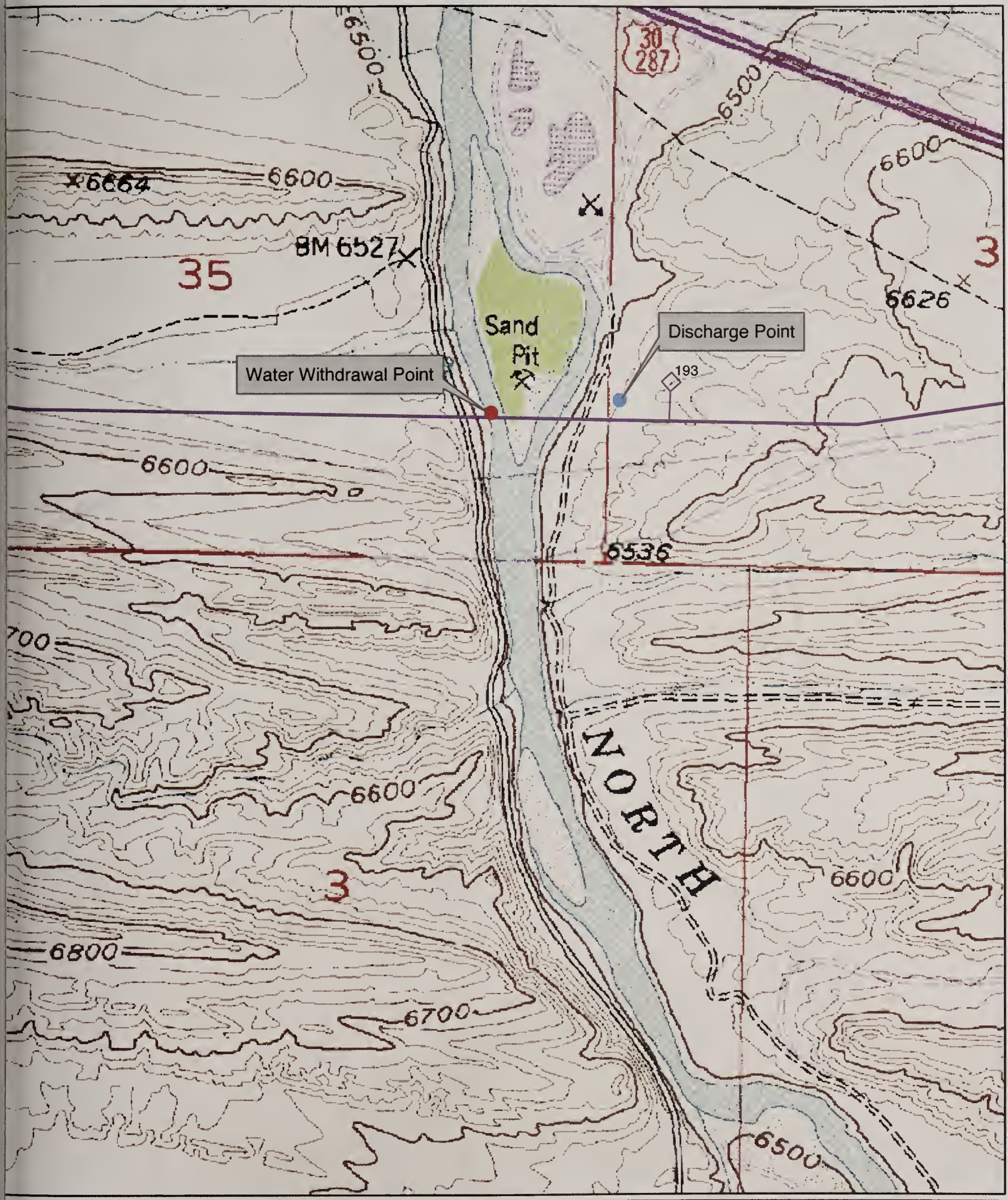
Entrega Gas Pipeline

Hydrostatic Test Withdrawal and Discharge Locations

Little Snake River
Moffat County, CO

TRIGON EPC
ENGINEERING·PROCUREMENT·CONSTRUCTION

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Entrega Gas Pipeline

Hydrostatic Test Withdrawal and Discharge Locations

North Platte River
Carbon County, WY

TRIGON EPC
ENGINEERING · PROCUREMENT · CONSTRUCTION

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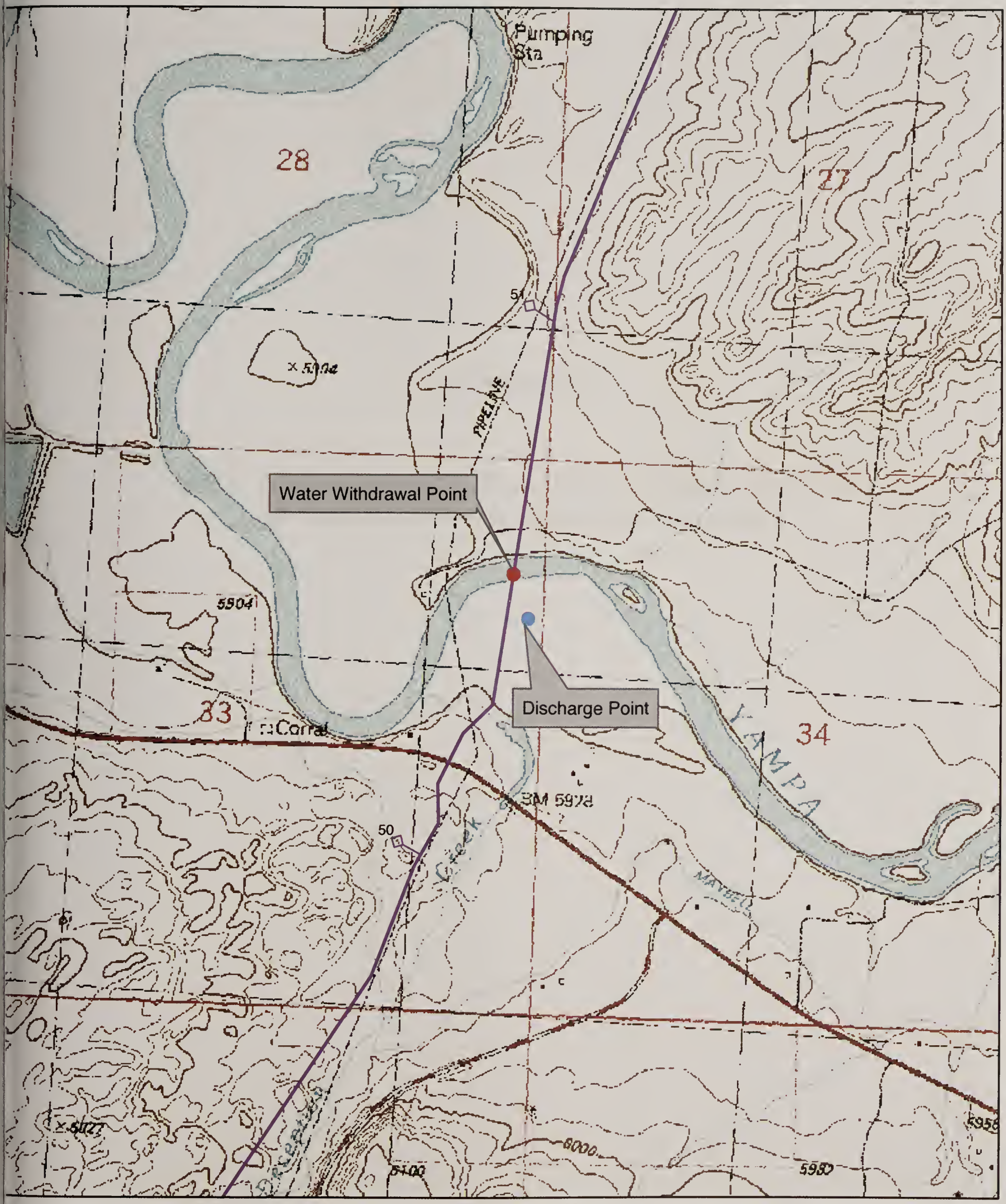
Entrega Gas Pipeline

Hydrostatic Test Withdrawal and Discharge Locations

White River
Rio Blanco County, CO

TRIGON EPC
ENGINEERING • PROCUREMENT • CONSTRUCTION

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Entrega Gas Pipeline

Hydrostatic Test Withdrawal and Discharge Locations

Yampa River
Moffat County, CO

TRIGON EPC
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APPENDIX J

WETLANDS AFFECTED DURING CONSTRUCTION OF THE ENTREGA PIPELINE PROJECT

Entrega Pipeline Project					
Wetlands Affected During Construction					
Beginning Milepost	Disturbance source (Pipeline, ATWS, or Aboveground Facilities)	County	NWI Wetland Classification	Crossing Length (miles)	Acres Affected During Construction
COLORADO					
0.5	F	Rio Blanco	PEM	NA	5.20
0.19	P	Rio Blanco	PEM	0.1	0.91
0.57	P	Rio Blanco	PEM	0.05	0.45
0.67	P	Rio Blanco	PEM	0.21	1.91
0.95	P	Rio Blanco	PEM	0.03	0.27
0.99	P, A	Rio Blanco	PEM	0.14	2.26
1.26	P	Rio Blanco	PEM	0.03	0.27
1.33	P	Rio Blanco	PEM	0.04	0.36
2.59	P	Rio Blanco	PEM	0.09	0.82
2.68	P	Rio Blanco	PEM	0.09	0.82
2.83	P	Rio Blanco	PEM	0.23	2.09
3.06	P	Rio Blanco	PEM	0.03	0.27
3.09	P	Rio Blanco	PEM	0.08	0.73
3.17	P	Rio Blanco	PEM	0.11	1.00
3.28	P	Rio Blanco	PEM	0.01	0.09
3.29	P	Rio Blanco	PEM	0.05	0.45
3.34	P	Rio Blanco	PEM	0.05	0.45
5.18	P	Rio Blanco	PAB	0.06	0.55
5.82	P	Rio Blanco	PEM	0.04	0.36
7.11	P, A	Rio Blanco	PEM	0.03	1.15
7.34	P	Rio Blanco	PEM	0.02	0.18
7.73	P, A	Rio Blanco	PEM	0.32	3.27
8.2	P	Rio Blanco	PEM	0.52	4.73
8.74	P	Rio Blanco	PEM	0.08	0.73
8.82	P, A	Rio Blanco	PEM	0.67	6.45
9.8	P	Rio Blanco	PEM	0.13	1.18
9.97	P	Rio Blanco	PEM	0.03	0.27
10	P, A	Rio Blanco	PEM	0.05	2.01
10.05	P	Rio Blanco	PEM	0.02	0.18
12.94	P	Rio Blanco	PSS	0.04	0.36
14.89	P	Rio Blanco	PSS	0.1	0.91
14.99	P	Rio Blanco	PEM	0.04	0.36
15.03	P	Rio Blanco	PSS	0.02	0.18
15.05	P, A	Rio Blanco	PEM	0.07	2.08
15.12	P	Rio Blanco	PSS	0.04	0.36
15.2	P, A	Rio Blanco	PEM	0.02	1.37
22.85	P	Rio Blanco	PAB	0.02	0.18

Entrega Pipeline Project					
Wetlands Affected During Construction					
Beginning Milepost	Disturbance source (Pipeline, ATWS, or Aboveground Facilities)	County	NWI Wetland Classification	Crossing Length (miles)	Acres Affected During Construction
30.07	P	Moffat	PEM	0.03	0.27
31.53	P	Moffat	PAB	0.08	0.73
34.01	P	Moffat	PUS	0.03	0.27
35.3	P, A	Moffat	PAB	0.02	0.42
50.23	P, A	Moffat	PSS	0.02	0.96
50.25	P, A	Moffat	PEM	0.16	2.15
59.71	P	Moffat	PAB	0.02	0.18
84.38	P	Moffat	PEM	0.04	0.36
Colorado wetlands crossed (number)					**45**
Colorado subtotal (acres)					**50.61**
WYOMING					
165.17	P	Carbon	PEM	0.03	0.27
165.21	P	Carbon	PEM	0.06	0.55
169.91	P	Carbon	PEM	0.06	0.55
170.91	P	Carbon	PEM	0.06	0.55
208.97	P	Carbon	PEM	0.06	0.55
222.61	P	Carbon	PUS	0.04	0.36
234.27	P	Carbon	PEM	0.02	0.18
237.67	P, A	Carbon	PEM	0.1	1.40
238.23	P	Carbon	PEM	0.05	0.45
238.38	P	Carbon	PEM	0.04	0.36
239.3	P	Carbon	PEM	0.06	0.55
240.94	P	Carbon	PEM	0.04	0.36
241.34	P	Carbon	PEM	0.07	0.64
245.79	P	Carbon	PEM	0.02	0.18
245.84	P	Carbon	PEM	0.28	2.55
249.91	P	Albany	PEM	0.12	1.09
250.05	P	Albany	PEM	0.03	0.27
252.05	P	Albany	PEM	0.24	2.18
252.47	P	Albany	PEM	0.09	0.82
252.62	P	Albany	PEM	0.06	0.55
253.02	P, A	Albany	PEM	0.18	2.03
253.31	P	Albany	PEM	0.08	0.73
256.59	P	Albany	PEM	0.05	0.45
257.34	P	Albany	PEM	0.22	2.00
260.4	P	Albany	PEM	0.05	0.45
260.61	P	Albany	PEM	0.09	0.82
260.78	P, A	Albany	PEM	0.07	1.06
260.93	P	Albany	PEM	0.38	3.45

Entrega Pipeline Project					
Wetlands Affected During Construction					
Beginning Milepost	**Disturbance source (Pipeline, ATWS, or Aboveground Facilities)**	**County**	**NWI Wetland Classification**	**Crossing Length (miles)**	**Acres Affected During Construction**
262.02	P	Albany	PEM	0.03	0.27
262.1	P	Albany	PEM	0.03	0.27
262.23	P	Albany	PUS	0.04	0.36
262.96	P	Albany	PEM	0.05	0.45
264.09	P	Albany	PEM	0.2	1.82
264.62	P	Albany	PUS	0.16	1.45
264.78	P	Albany	PEM	0.04	0.36
264.82	P	Albany	PUS	0.04	0.36
265.06	P	Albany	PEM	0.06	0.55
265.28	P	Albany	PEM	0.04	0.36
265.4	P	Albany	PEM	0.06	0.55
265.52	P	Albany	PEM	0.12	1.09
273.63	P	Albany	PEM	0.04	0.36
273.77	P	Albany	PEM	0.02	0.18
273.82	P	Albany	PEM	0.04	0.36
273.89	P	Albany	PEM	0.13	1.18
274.18	P	Albany	PEM	0.18	1.64
274.43	P	Albany	PEM	0.03	0.27
274.47	P, A	Albany	PEM	0.56	6.57
276.82	P	Albany	PEM	0.02	0.18
277.04	P	Albany	PEM	0.17	1.55
277.24	P, A	Albany	PEM	0.05	1.33
277.34	P	Albany	PEM	0.05	0.45
Wyoming wetlands crossed (number)					**51**
Wyoming Subtotal (acres)					**47.39**
Project wetlands crossed (number)					**96**
Project total (acres)					**98.00**

APPENDIX K

SPECIAL STATUS SPECIES IDENTIFIED FOR THE ENTREGA PIPELINE PROJECT

Special Status Species Identified for the Entrega Pipeline Project

Common Name	Scientific Name	Status[1]	Habitat Association	Potential for Occurrence Within the Project Area	Eliminated From Detailed Analysis	References
MAMMALS						
Townsend's big-eared bat	*Plecotus townsendii*	BLM-WY; BLM-CO	This species inhabits dry coniferous forests, juniper woodlands, deciduous forests, basins, desert shrublands, and grasslands. Roost sites typically include caves and abandoned mines, but rock outcrops and buildings also will be used.	Low. This species could occur within suitable habitats in Colorado and Wyoming. No historic roost sites have been documented along the project route.	No.	Fitzgerald et al. 1994; WGFD 1996, 2004; WYNDD 2003.
Fringed myotis	*Myotis thysanodes*	BLM-WY; BLM-CO	This species primarily inhabits coniferous forests, woodland-chaparral, and basin-prairie shrublands, but have been documented in spruce-fir habitats. Roost sites include caves, abandoned mines, rock crevices, and buildings.	Low. This species could occur within suitable habitats along the western portion of the project route in Colorado and Wyoming. No historic roost sites have been documented along the project route.	No.	Fitzgerald et al. 1994; WGFD 1996, 2004; WYNDD 2003.
Yuma myotis	*Myotis yumanensis*	BLM-CO	This species inhabits Basin-prairie shrublands, riparian shrub, grassland, barren areas, cliffs, and rock outcrops. Roosts primarily in human-built structures (building and bridges), and occasionally in mines and caves.	Low. This species could occur within suitable habitats in Colorado and Wyoming. No historic roost sites have been documented along the project route.	No.	Fitzgerald et al. 1994; WGFD 1996, 2004; WYNDD 2003.
Swift fox	*Vulpes velox*	BLM-WY	This species is found in short-, mid-, and mixed-grass prairies with gently rolling hills. Den	Low. This species could occur within suitable habitats in Wyoming and in	No.	Fitzgerald et al. 1994; WGFD 1996, 2004; WYNDD 2003.

(Continued)

Common Name	Scientific Name	Status[1]	Habitat Association	Potential for Occurrence Within the Project Area	Eliminated From Detailed Analysis	References
			sites are typically located on flat areas or along slopes or ridges that provide a good view. Young are born in late March, April, or early May.	eastern Colorado.		
Black-footed ferret	*Mustela nigripes*	FE; CO-E; WY-S	Suitable habitat consists of black-tailed prairie dog colonies or complexes (80 acres or greater) or White-tailed prairie dog colonies or complexes (200 acres or greater). Most litters are born in May and emerge from their nursery dens in July.	Low. No black-footed ferret observations or sign were identified during the 2004 field surveys.	No. Potentially suitable habitat for this species could occur within nine prairie dog colonies of suitable size and density between MPs 86.0 and 152.0.	FWS 1989.
White-tailed prairie dog	*Cynomys leucurus*	BLM-WY BLM-CO[3]	This species occupies basin-prairie and mountain-foothill shrublands, sagebrush-grasslands, barren and overgrazed areas, and agricultural areas.	High. A total of 43 active white-tailed prairie dog colonies were identified along the project ROW. In addition, 42 white-tailed prairie dog colonies were identified along proposed access roads and 1 colony was located at a proposed pipeyard location.	No. Larger prairie dog colonies have been located in the project vicinity between MPs 86.0 and 152.0. Smaller prairie dog colonies have been located between MPs -0.5 and 86 and between MPs 152.0 and 300.	WGFD 2004; Fitzgerald et al. 1994.
Black-tailed prairie dog	*Cynomys ludovicianus*	FC	This species Inhabits short-grass or mixed grasslands that contain suitable upland soil types for constructing burrow	High. One active black-tailed prairie dog colony was identified along the project ROW.	No.	WGFD 2004; Fitzgerald et al. 1994.

(Continued)

Common Name	Scientific Name	Status[1]	Habitat Association	Potential for Occurrence Within the Project Area	Eliminated From Detailed Analysis	References
			systems.			
Preble's meadow jumping mouse	*Zapus hudsonius preblei*	FT; CO-T	This subspecies occurs in habitats consisting of well-developed plains riparian vegetation with dense herbaceous vegetation that include of a variety of grasses, forbs, and thick shrubs in close proximity to water. Suitable habitat can occur along stream channels, vegetated irrigation canals, ditches, and riparian and wetland areas.	Moderate. This subspecies could occur within suitable habitats along the eastern portion of the project route in Wyoming and Colorado.	No. Potentially suitable habitat for this subspecies was identified at 9 areas along the project ROW between MPs 289.8 and 320.2. Habitat also was located along two Class A access roads for the project.	FWS 2004.
BIRDS						
Northern goshawk	*Accipiter gentilis*	BLM-WY; BLM-CO	This species occupies mature, closed-canopied coniferous and aspen forests habitats. This species nests open older-aged class coniferous forests and aspen stands.	None.	Yes. No suitable breeding or foraging habitat would occur along the project route.	Kingery 1998; WGFD 1996, 2004.
Golden eagle	*Aquila chrysaetos*	BLM-WY; BLM-CO	This species occurs in a variety of habitats including grassland, pinyon-juniper woodland, coniferous and deciduous forests, shrubland, and rock outcrop. Nest sites are usually on located on cliffs and occasionally in large trees in open habitats.	High. This species could occur within suitable habitats along the project route.	No. A total of 21 nests have been identified within 1 mile of the project ROW.	Kingery 1998; WGFD 2004.

(Continued)

Common Name	Scientific Name	Status[1]	Habitat Association	Potential for Occurrence Within the Project Area	Eliminated From Detailed Analysis	References
Ferruginous hawk	*Buteo regalis*	BLM-WY; BLM-CO	This species occurs in open semi-arid habitats including basin-prairie shrubland, mountain-foothills, badlands, and grassland. Nest sites include trees, ledges, and rock outcrops in sagebrush valleys and rolling grassland habitat.	High. This species could occur within suitable habitats along the project route.	No. A total of 25 nests have been identified within 1 mile of the project ROW.	Kingery 1998; WGFD 1996, 2004.
Swainson's hawk	*Buteo swainsoni*	BLM-CO	This species typically occurs in arid and semi-arid grassland habitats and in agricultural areas with scattered trees and shrubs. Nest sites typically occur in isolated trees, but will sometimes nest on cliffs or rock outcrops.	Moderate. This species could occur within suitable habitats along the project route.	No. One nest site has been documented within 1 mile of the project ROW.	Kingery 1998; WGFD 2004.
Bald eagle	*Haliaeetus leucocephalus*	FT[2]; CO-T; WY-S	This species typically occurs near large bodies of water that support suitable roosting and foraging habitat. Nests are commonly built in mature cottonwoods or conifers along lakes or other large bodies of water.	High. This species could occur within suitable habitats along the project route.	No. Two nest sites and winter roost areas have been identified in the vicinity of the project ROW.	Kingery 1998; WGFD 1996, 2004.
American peregrine falcon	*Falco peregrinus*	BLM-WY	This species typically breeds in foothills and mountainous areas. Nest sites are often located on ledges of high, steep-	Low. No falcon nest sites have been identified as occurring within the vicinity of the	No.	Kingery 1998; WGFD 2004.

(Continued)

Common Name	Scientific Name	Status[1]	Habitat Association	Potential for Occurrence Within the Project Area	Eliminated From Detailed Analysis	References
			walled cliffs. Preferred foraging habitat includes marshes, lakes, rivers, and wet meadows.	project route.		
Greater sage-grouse	*Centrocercus urophasianus*	BLM-WY; BLM-CO[4]	The sage grouse is a sagebrush obligate species. Lek sites are generally located in open areas such as broad ridges, grassy areas, and disturbed sites, adjacent to suitable nesting habitat. Nesting occurs within sagebrush stands with adequate height and canopy cover, and food source.	High. This species could occur within suitable habitats along the project route. Occurrence by this species has been documented within the project vicinity in Wyoming and in western Colorado. A total of 34 historic lek sites have been identified as occurring within 2 miles of the project ROW.	No. Potentially suitable breeding habitat for this species could occur between MPs 40.0 and 237.0. In addition, a total of 7 active lek sites have been documented within 2 miles of the project ROW during the 2004 surveys. The 2004 survey had a positive identification at one location along the ROW.	Connelly et al. 2004; Kingery 1998; WGFD 2004; 70 FR 2244.
Whooping crane	*Grus americana*	FE; CO-E	During migration, this species feeds and roosts in a variety of habitats including croplands, large and small freshwater marshes, the margins of lakes and reservoirs, and submerged sandbars in rivers.	None. Occurrence by this species along the project route would be limited to accidentals from the Aransas-Wood Buffalo population. The Grays Lake population is thought to be extinct.	Yes. This species is not expected within the project vicinity, and water withdrawals from the Platte River Drainage would be purchased from the Bureau of Reclamation under an existing water right.	BCD 2002; USGS [no date].

(Continued)

Common Name	Scientific Name	Status[1]	Habitat Association	Potential for Occurrence Within the Project Area	Eliminated From Detailed Analysis	References
Piping plover	*Charadrius melodus circumcinctus*	FT; CO-T	Breeding habitat for this species consists of open sand, gravel, or cobble beaches located on broad sandy beaches along rivers, lakes, and reservoirs.	None. This species is considered as an accidental in Wyoming. This species has been observed in Laramie County, Wyoming. No breeding records have recorded in the project vicinity in Colorado.	Yes. This species is not expected within the project vicinity, and water withdrawals from the Platte River Drainage would be purchased from the Bureau of Reclamation under an existing water right.	66 FR 36037; Kingery 1998; WGFD 2004; WYNND 2003.
Mountain plover	*Charadrius montanus*	BLM-WY; BLM-CO	This species inhabits flat, short-grass prairie in areas often grazed by livestock and in areas occupied by prairie dog colonies.	Moderate. This species could occur within suitable habitats along the project route. Occurrence by this species has been documented within the project vicinity in Wyoming and in eastern Colorado.	No. Potentially suitable habitat for this species occurs between MPs 44 and 327.0. This species also was located during the 2004 field surveys between MPs 113.3 and 124.2.	Kingery 1998; WGFD 1996, 2004.
Eskimo curlew	*Numenius borealis*	FE	This species is a rare spring migrant that feeds and rests in burned-over prairies, agricultural areas, and marshes.	None. This species would not occur along the project route.	Yes. This species is not expected within the project vicinity, and water withdrawals from the Platte River Drainage would be purchased from the Bureau of Reclamation under an existing water right.	USGS [no date].

(Continued)

Common Name	Scientific Name	Status[1]	Habitat Association	Potential for Occurrence Within the Project Area	Eliminated From Detailed Analysis	References
Interior least tern	*Sterna antillarum athalassos*	FE; CO-E	This subspecies breeds along prairie rivers, lakes, and reservoirs. Nests sites occur in open, sandy areas, gravelly patches, and on alkali flats.	None. This species has been observed in Laramie County, Wyoming. No breeding records have recorded in the project vicinity in Colorado.	Yes. This species is not expected within the project vicinity, and water withdrawals from the Platte River Drainage would be purchased from the Bureau of Reclamation under an existing water right.	Kingery 1998; WGFD 2004.
Yellow-billed cuckoo	*Coccyzus americanus*	FC; BLM-WY; BLM-CO; WY-S	This species inhabits lowland deciduous woodlands, willow and alder thickets, mature cottonwood-riparian woodlands, deserted farmlands, and orchards. Breeding typically occurs in riparian woodlands.	Low. The dense riparian habitat necessary to support yellow-billed cuckoos is not present in the project area.	Yes.	Kingery 1998; WGFD 1996, 2004; WYNND 2003.
Western burrowing owl	*Athene cunicularia hypugea*	BLM-WY; CO-T	This species nest in non-riparian habitats including abandoned burrows of prairie dogs, ground squirrels, foxes, and badgers in grassland, open shrubland, and woodland communities.	High. This subspecies could nest within potentially suitable habitat along the project route.	No. A total of 5 nests have been identified within 1 mile of the project ROW. One burrowing owl was identified along the project ROW during the 2004 field surveys.	Kingery 1998; WGFD 2004; WYNND 2003.
Loggerhead shrike	*Lanius ludovicianus*	BLM-WY	This species typically inhabits open riparian areas, agricultural areas, grasslands, and	Moderate. This species could nest within suitable habitat along the	No. This species was identified at six locations along the project ROW	Kingery 1998; WGFD 2004.

(Continued)

Common Name	Scientific Name	Status[1]	Habitat Association	Potential for Occurrence Within the Project Area	Eliminated From Detailed Analysis	References
			shrublands (especially semidesert shrublands). Nest sites usually occur in isolated trees or large shrubs.	project route.	between MPs 81 and 172.	
AMPHIBIANS						
Great Basin spadefoot toad	*Spea intermontana*	BLM-WY; BLM-CO	This species inhabits pinon-juniper woodlands, sagebrush, and semi-desert shrubland. This species uses both permanent and temporary water sources for breeding. Breeding occurs in May through July.	Low. This species could occur within suitable habitats along the project route. This species has been observed western Colorado and in Sweetwater County, Wyoming.	No.	Baxter and Stone 1980; Hammerson 1999; WGFD 2004; WYNND 2003.
Western boreal toad	*Bufo boreas boreas*	FC; CO-E; BLM-WY; WY-S	This species typically occupies damp conditions in the vicinity of marshes, wet meadows, streams, beaver ponds, kettle ponds, and lakes. Breeds in still to slow moving waters. Breeding occurs in May through August depending on elevation.	Low. This species could occur within counties crossed by the project; however, suitable habitat (based on known occurrence records) is likely not crossed.	Yes.	Baxter and Stone 1980; Hammerson 1999; WGFD 2004; WYNND 2003.
Wyoming toad	*Bufo baxteri*	FE; WY-S	This species inhabits floodplains, ponds, and small seepage lakes in shortgrass communities of the Laramie Basin. Requires some deep soft soil for burrowing. Breeding occurs in May through August.	Low. The proposed route does not cross suitable habitat for this species, based on presently known geographic range and occurrence records.	No.	Baxter and Stone 1980; WGFD 2004; WYNND 2003.

(Continued)

Common Name	Scientific Name	Status[1]	Habitat Association	Potential for Occurrence Within the Project Area	Eliminated From Detailed Analysis	References
Northern leopard frog	*Rana pipiens*	BLM-WY; BLM-CO	This species inhabits marshes, ponds, beaver ponds, lakes, reservoirs, streams, and irrigation ditches. Breeding occurs in March through mid-September.	High. This species has been identified within suitable habitat along the project route.	No. This species was identified at six locations between MPs 5.7 and 13.7 during the 2004 field surveys.	Baxter and Stone 1980; WGFD 2004; WYNND 2003.
REPTILES						
Midget faded rattlesnake	*Crotalus viridis concolor*	BLM-CO	This species inhabits rock outcrops in the sagebrush communities.	Low. This species could occur within suitable habitats along the project route in Sweetwater County, Wyoming.	No.	Baxter and Stone 1980; WGFD 2004; WYNND 2003.
FISHES						
Bonytail	*Gilia elegans*	FE	This rare species occur in larger river channels of Green, Colorado, Yampa, and Gilia Rivers in Colorado River drainage. This species primarily occupies pools and eddies rather than areas with swift current. Spawning typically occurs in June and July when water temperatures are approximately 64°F.	None. No known populations occur in Colorado. The last occurrence by this species in Yampa River was recorded at the confluence of the Green River in 1979.	No. Although it is highly unlikely that this species would occur along the project route, potential water depletions from the Colorado River Drainage could impact suitable habitat.	Lee et al. 1980; USFWS 1990, 1993; Woodling 1985.
Bluehead sucker	*Catostomus discobolus*	BLM-WY; BLM-CO	This species is found in a variety of fluvial habitats, ranging from cold, clear trout streams to warm, turbid streams, with moderate-to-fast velocity. This species prefers	Low. This species is known to occur in riverine habitats on the western slope of Colorado including the Yampa and Little	No.	Baxter and Simon 1970; Lee et al. 1980; Woodling 1985.

(Continued)

Common Name	Scientific Name	Status[1]	Habitat Association	Potential for Occurrence Within the Project Area	Eliminated From Detailed Analysis	References
			areas with riffles over a rocky substrate. Spawning occurs in late spring or early summer at water temperatures of at least 61°F.	Snake Rivers and along the Little Snake River in Wyoming.		
Colorado pikeminnow	*Ptychocheilus lucius*	FE; CO-T	This species occurs in big, deep-water riverine habitats at a variety of depths and velocities over silt, sand, gravel, and boulder substrates. Spawning occurs in run, eddy, and pool habitats in from June through August at water temperatures ranging from 71° to 77°F. Young fish primarily inhabit shallow, backwater areas over silt and sand bottoms.	High. The project would intersect critical habitat for this species at the White River and Yampa River crossings. Potential water depletions from the Colorado River Drainage also could impact suitable habitat.	No.	59 FR 13374; FWS 1993; Woodling 1985.
Flannelmouth sucker	*Catostomus latipinnis*	BLM-WY; BLM-CO	This species inhabits large streams and rivers in all habitat types including riffles, runs, pools, eddies, and backwaters. This species also enters mouths of small tributary streams. Spawning occurs in spring and early summer on riffles with coarse gravel bottoms at water temperatures near 55°F.	Low. This species could potentially occur at or near the crossing of the White River and Yampa River.	No.	FWS 1993; Woodling 1985.
Humpback chub	*Gilia cypha*	FE	This species occupies a	None. The closest	No. Although it is	Lee et al. 1980;

(Continued)

Common Name	Scientific Name	Status[1]	Habitat Association	Potential for Occurrence Within the Project Area	Eliminated From Detailed Analysis	References
			variety of riverine habitats including in deep water pools riffles and eddies over silt, sand, boulder, and bedrock substrate. Spawning typically occur after the highest spring flows when water temperatures approach 68°F. Young fish utilize shallow areas in backwaters, eddies, and runs.	known population occurs more than 40 miles west of the Yampa River crossing at the confluence of the Yampa and Green Rivers.	highly unlikely that this species would occur along the project route, potential water depletions from the Colorado River Drainage could impact suitable habitat.	FWS 1993; Woodling 1985.
Roundtail chub	*Gila robusta*	BLM-CO; BLM-WY	This species inhabits pools, eddies, runs, and ruffles in moderate to large rivers. Spawns in spring and early summer.	Moderate. This species could potentially occur at the White and Yampa River crossings.	No.	Karp and Tyus 1990; Woodling 1985.
Mountain sucker	*Catostomus platyrhynchus*	BLM-CO	This species is found in smaller rivers and streams with gravel, sand, and mud substrates. It typically occupies undercut banks, eddies, small pools, and areas of moderate current. Spawning occurs in late spring and early summer.	Moderate. This species could potentially occur at river and stream crossing within the project area in western Colorado and in Sweetwater and Carbon in Wyoming.	No.	Baxter and Simon 1970; Lee et al. 1980; Woodling 1985.
Pallid sturgeon	*Scaphirhynchus albus*	FE	This species is almost entirely restricted to main river channels in areas of string current over a firm sand substrate. Spawns in June and July.	None. This species would not occur along the project route.	Yes. This species is not expected within the project vicinity, and water withdrawals from the Platte River	Lee et al. 1980.

(Continued)

Common Name	Scientific Name	Status[1]	Habitat Association	Potential for Occurrence Within the Project Area	Eliminated From Detailed Analysis	References
					Drainage would be purchased from the Bureau of Reclamation under an existing water right.	
Razorback sucker	*Xyrauchen texanus*	FE; CO-E	This species is found in backwaters, eddies, pools, and flat-water areas in the main channel. Sand or silt substrates with low water velocity are preferred. Spawning occurs over mixed substrate in the spring with rising water levels and increasing temperatures ranging from 48° to 63°F. Young fish utilize quiet, shallow backwaters and river margins.	None. The closest known population occurs more than 40 miles west of the Yampa River crossing at the confluence of the Yampa and Green Rivers.	No. Although it is highly unlikely that this species would occur along the project route, potential water depletions from the Colorado River Drainage could impact suitable habitat.	FWS 1993; Woodling 1985.
PLANTS						
Debris milkvetch	*Astragalus detritalis*	BLM-CO	This species is found on rocky or sandy soils on alluvial terraces with cobbles in pinyon-juniper and mixed desert shrub communities. Flowering period: Late April-early June. Elevation: 5,400-7,200 feet.	Moderate. This species could occur along the project route in Rio Blanco and Moffat Counties, Colorado.	No. This species could occur within potentially suitable habitat from MPs -0.5 to 35.4.	Spackman et al. 1997.
Nelson milkvetch	*Astragalus nelsonianus*	BLM-WY; BLM-CO	This species is found in gullies and flats on seleniferous soils in	Low. This species could occur along the project route in	No. This species could occur within potentially suitable	Spackman et al. 1997.

(Continued)

Common Name	Scientific Name	Status[1]	Habitat Association	Potential for Occurrence Within the Project Area	Eliminated From Detailed Analysis	References
			sparsely vegetated sagebrush. Flowering period: late May-August. Elevation: 6,000-7,000 feet.	Sweetwater County, Colorado.	habitat from MPs -0.5 to 35.4 and from MPs 85.6 to 318.5.	
Park rockcress	*Boechera fernaldiana*	BLM-CO	This species occurs on limestone and sandstone outcrops (usually Weber sandstone) in mixed desert shrub and pinyon-juniper communities, often in pine duff in shade.	None.	Yes. This species occurs outside of the project area in the extreme western portion of Moffat County, Colorado.	Spackman et al. 1997.
Ephedra buckwheat	*Eriogonum ephredoides*	BLM-CO	This species occurs on sparsely vegetated slopes on white shales of the Green River Formation and soils derived from them.	None.	Yes. This species occurs outside of the project area in the extreme western portion of Rio Blanco County, Colorado.	Spackman and Anderson 2002.
Colorado butterfly plant	*Gaura neomexicana ssp. coloradensis*	FT	Occurs in wet meadows and sub-irrigated soils on level or slightly sloping floodplains and drainage bottoms. Flowering period: June-September. Elevation: 5,800-6,200 feet.	Low. This species could occur within potentially suitable habitat along the project route in Laramie County, Wyoming, and in Weld County, Colorado.	No. Potentially suitable habitat for this species could occur between MPs 300.0 and 327.0.	Fertig 1994; Spackman et al. 1997.
Utah genetian	*Gentianella tortuosa*	BLM-CO	This species occurs on barren shale knolls and slopes of the Green River Formation. Flowering period: July-August. Elevation: 8,500-10,800	None.	Yes. This species does not occur within the elevational range of this species in Rio Blanco County,	Spackman et al. 1997.

(Continued)

Common Name	Scientific Name	Status[1]	Habitat Association	Potential for Occurrence Within the Project Area	Eliminated From Detailed Analysis	References
			feet.		Colorado.	
Narrow-stem gilia	*Gilia stenothyrsa*	BLM-CO	This species occurs in grassland, sagebrush, mountain-mahogany, or pinyon-juniper communities on silty to gravelly loam soils derived from the Green River and Uinta formations. Flowering period: Late May-June. Elevation: 5,000-6,000 feet.	Low. This species could occur within potentially suitable habitat along the project route in Rio Blanco County, Colorado.	No. This species could occur within potentially suitable habitat from MPs -0.5 to 35.4.	Spackman et al. 1997.
Dudley Bluffs bladderpod	*Lesquerella congesta*	FT	This species inhabits barren white shale outcrops of the Green River and Uinta formations exposed along drainages through erosion from the downcutting of streams in the Piceance Basin. Flowering period: April-May. Elevation: 6,000-6,700 feet.	Low. This species could occur within potentially suitable habitat along the project route in Rio Blanco County, Colorado.	No. Potentially suitable habitat for this species could occur between MPs -0.5 and 15.1.	Spackman et al. 1997.
Piceance bladderpod	*Lesquerella parviflora*	BLM-CO	This species occupies shale outcrops of the Green River Formation, on ledges and slopes of canyons in open area. Flowering period: June-early July. Elevation: 6,200-8,600 feet.	Low. This species could occur within potentially suitable habitat along the project route in Rio Blanco County, Colorado.	No. This species could occur within potentially suitable habitat from MPs -0.5 to 35.4.	Spackman et al. 1997.
Narrow-leaf evening primrose	*Oenothera acutissima*	BLM-CO	This species is found in sandy, gravelly or rocky soils, in seasonally wet	None.	Yes. This species occurs outside of the project area in	Spackman et al. 1997.

(Continued)

Common Name	Scientific Name	Status[1]	Habitat Association	Potential for Occurrence Within the Project Area	Eliminated From Detailed Analysis	References
			areas; in meadows, depressions, or along arroyos in habitats ranging from mixed conifer forest to sagebrush scrub.		western Moffat County, Colorado.	
Rollins cryptanth	*Oreocarya rollinsii*	BLM-CO	This species occurs on white shale slopes of the Green River Formation in pinyon-juniper or cold desert shrubland communities.	None.	Yes. This species occurs outside of the project area in western Moffat County, Colorado.	Spackman et al. 1997.
Gibben's beardtongue	*Penstemon gibbensii*	BLM-WY; BLM-CO	This species is found in sparsely vegetated shale or sandy-clay slopes of the Brown's Park Formation. Associated vegetation includes pinyon-juniper woodland, sagebrush, or salt desert shrub communities. Flowering period: June-September. Elevation: 5,500-7,700 feet.	Low. This species could occur within potentially suitable habitat along the project route in Sweetwater and Carbon Counties, Wyoming.	No. This species could occur within potentially suitable habitat from MPs -0.5 to 35.4 and from MPs 85.6 to 318.5. This species was identified in the project vicinity during the 2004 field surveys.	Fertig 1994; Spackman et al. 1997.
Blowout penstemon	*Penstemon haydenii*	FE	This species occurs on steep, northwest-facing slopes of active, blowout sand dunes with sparse vegetative cover. Flowering period: May-June. Elevation: 6,680-7,440 feet.	Low. Only one known population has been documented south of the Ferris Mountains in northwestern Carbon County.	No.	Fertig 2000.
Dudley Bluffs twinpod	*Physaria obcordata*	FE	This species is found on barren white outcrops and steep slopes exposed by	Low. This species could occur within potentially suitable	No. Potentially suitable habitat for this species could	Spackman et al. 1997.

(Continued)

Common Name	Scientific Name	Status[1]	Habitat Association	Potential for Occurrence Within the Project Area	Eliminated From Detailed Analysis	References
			creek downcutting. It is restricted to the Parachute Creek Member of the Green River Formation. Flowering period: May-June. Elevation: 5,900-7,500 feet.	habitat along the project route in Rio Blanco County, Colorado.	occur between MPs -0.5 and 15.1. This species was identified in the project vicinity during the 2004 field surveys.	
Western prairie-fringed orchid	*Platanthera praeclara*	FT	This orchid occurs most often in mesic to wet unplowed tallgrass prairies and meadows but have been found in old fields and roadside ditches.	None. This species would not occur along the project route.	Yes. This species is not expected within the project vicinity, and water withdrawals from the Platte River Drainage would be purchased from the Bureau of Reclamation under an existing water right.	Bjugstad and Bjugstad 1989.
Laramie false sagebrush	*Sphaeromeria symplex*	BLM-WY	This species is found in cushion plant communities on rocky limestone ridges and gentle slopes. Flowering period: May-August. Elevation: 7,500-8,600 feet.	Low. This species could occur within potentially suitable habitat along the project route in eastern Wyoming.	No. This species could occur within potentially suitable habitat from MPs 85.6 to 318.5.	Fertig 1994.
Ute ladies'-tresses	*Spiranthes diluvialis*	FT	This species is found in sub-irrigated alluvial soils along streams, and in open meadows in flood plains. Flowering period: July-September. Elevation: 4,500-6,800	Low. This species could occur within potentially suitable habitat along the project route in eastern Wyoming and eastern	No.	Fertig 1994; Spackman et al. 1997.

(Continued)

Common Name	Scientific Name	Status[1]	Habitat Association	Potential for Occurrence Within the Project Area	Eliminated From Detailed Analysis	References
			feet.	Colorado.		

[1]Status:
FE = Federally listed as endangered.
FT = Federally listed as threatened.
FC = Federal candidate.
CO-E = State-listed as endangered in Colorado.
CO-T = State-listed as threatened in Colorado.
WY-S = Wyoming sensitive.
BLM-WY = Wyoming BLM sensitive.
BLM-CO = Colorado BLM sensitive.
[2] Proposed to be de-listed.
[3] Petitioned to be federally listed as threatened and endangered.
[4] The FWS determined that listing this species as threatened or endangered is not warranted.

APPENDIX L

MAPS SHOWING PIPELINE ROUTE AND ABOVEGROUND FACILITIES

MP 0 | MP 5 | MP 10 | MP 15 | MP 20

Meeker Hub Compressor Station (1)

Land Ownership (Federal, State, Private, Public ROW)

Private | BLM | State of Colorado | Private | BLM | Private | State of Colorado | Private | BLM | State of Colorado | BLM | Private | State of Colorado | Private | BLM

Transportation Crossings

Rio Blanco County CR 24 | Rio Blanco County CR 5 | Colorado SR 64 | Rio Blanco County CR 71

Seasonal Wildlife Constraints (Winter and Spring Constraints)

General Natural Vegetation Communities

Sagebrush | Agriculture | Sage-brush | Agriculture | Pinyon - Juniper Woodland | Agriculture | Sagebrush | Pinyon - Juniper Woodland | Sagebrush | Pinyon - Juniper Woodland | Agriculture | Sagebrush | Pinyon - Juniper Woodland | Sagebrush | Pinyon - Juniper Woodland | Sagebrush | Salt Desert / Greasewood

Wetlands

Waterbodies Supporting Fisheries (Warm and Cold Water Habitat)

Piceance Creek | Piceance Creek | Piceance Creek | Piceance Creek | Piceance Creek | Piceance Creek | Piceance Creek | Piceance Creek | White River

Fault Crossings | MP 0 | MP 5 | MP 10 | Fault Crossing | MP 15 | Fault Crossing | MP 20

ENTREGA PIPELINE PROJECT

Map 1 of 17

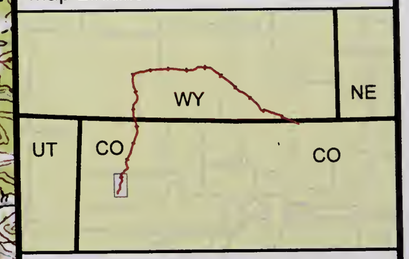
Rio Blanco County, CO



Legend

- Pipeline with Mileposts
- Access Roads
- Aboveground Project Facilities
- (2) Mainline Valves
- Match Lines

Map Location



0 0.5 1 2 Kilometers

0 0.5 1 2 Miles

Scale = 1:100,000

USGS 1:100,000 series Rangely, CO, and Douglas Pass, CO

1/12/05

MP 20 | MP 25 | MP 30 | MP 35 | MP 40

Land Ownership: BLM | Private | BLM | Private | BLM | Private | BLM | Private | Private | BLM | Private | BLM | Private | BLM | Private | BLM | Private | BLM | Private | BLM | Private | BLM | Private | BLM | Private | BLM | Private | BLM | Private | State of Colorado | Private | Private | BLM | BLM | Private | BLM | Private | BLM

Transportation Crossings: Moffat County CR 57 | Moffat County CR 57

Seasonal Wildlife Constraints (Winter and Spring Constraints)

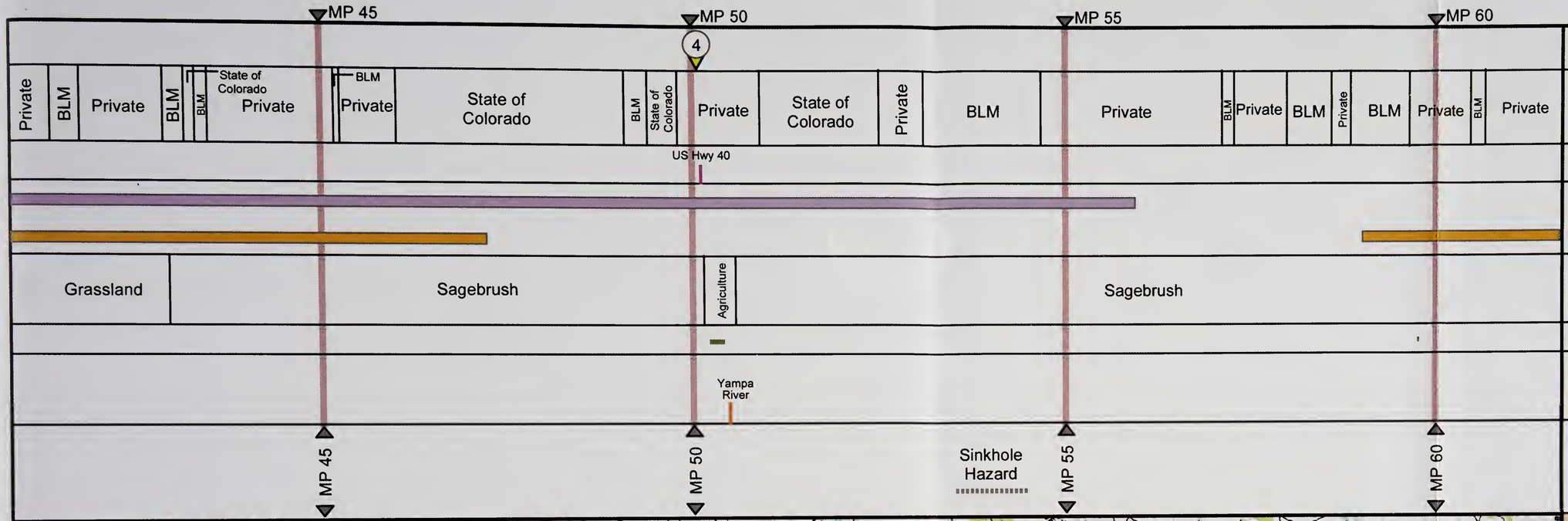
General Natural Vegetation Communities: Pinyon - Juniper Woodland | Sagebrush | Salt Desert/ Greasewood | Pinyon-Juniper Woodland | Salt Desert/ Greasewood | Pinyon-Juniper Woodland | Salt Desert/ Greasewood | Sagebrush | Foothill Shrub-Scrub | Sagebrush | Pinyon-Juniper Woodland | Sagebrush | Grassland

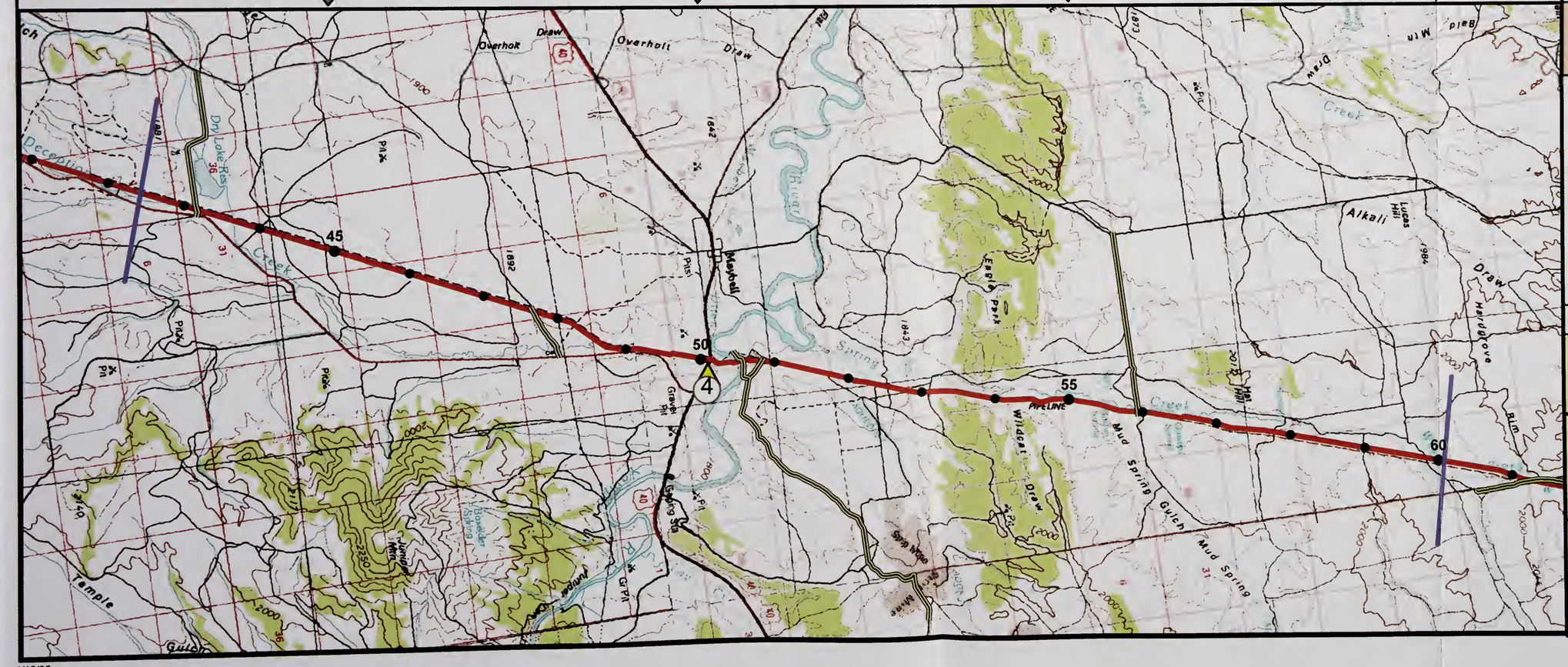
Wetlands

Waterbodies Supporting Fisheries (Warm and Cold Water Habitat): Deep Channel Creek | Deep Channel Creek

MP 20 | MP 25 Sinkhole Hazard | Fault Crossing | MP 30 Landslide / Debris Flow Zone | MP 35 | MP 40


20
Indian Valley
Pinto Gulch
Horse Ridge
Tschuddi
Gulch
RIO BLANCO CO
MOFFAT CO
Plateau
Swan
Bob Hughes Creek
Freeman Gulch
Jacobs Draw
Wild Horse
Pipe Trace
Gulch
35
40
3
DANFORTH HILLS
Escarpment Peak
Scenery Gulch
Rimrock
Draw
Gulch
Gulch
Gulch





Project Component

Land Ownership
(Federal, State, Private, Public ROW)

Transportation Crossings

Seasonal Wildlife Constraints
(Winter and Spring Constraints)

General Natural Vegetation Communities

Wetlands

Waterbodies Supporting Fisheries
(Warm and Cold Water Habitat)

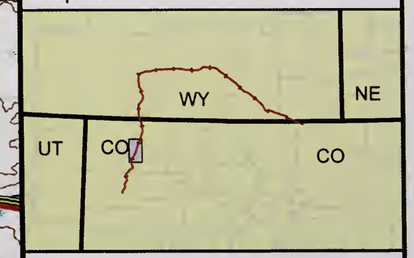
ENTREGA PIPELINE PROJECT

Map 3 of 17
Moffat County, CO

Legend

- Pipeline with Mileposts
- Access Roads
- Aboveground Project Facilities
- Mainline Valves
- Match Lines

Map Location



0 0.5 1 2 Kilometers
0 0.5 1 2 Miles

Scale = 1:100,000

USGS 1:100,000 series Craig, CO, Rangely, CO and Canyon of Lodore, CO

1/12/05

MP 60 | MP 65 | MP 70 | MP 75

Bighole Compressor Station — 6

5

| | | |



Project Component

Land Ownership
(Federal, State, Private, Public ROW)

Transportation Crossings

Seasonal Wildlife Constraints
(Winter and Spring Constraints)

General Natural Vegetation Communities

Wetlands

Waterbodies Supporting Fisheries
(Warm and Cold Water Habitat)

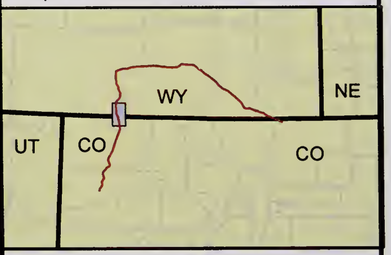
ENTREGA PIPELINE PROJECT

Map 5 of 17
Moffat County, CO and Sweetwater County, WY

Legend

- Pipeline with Mileposts
- Access Roads
- Aboveground Project Facilities
- Mainline Valves
- Match Lines

Map Location

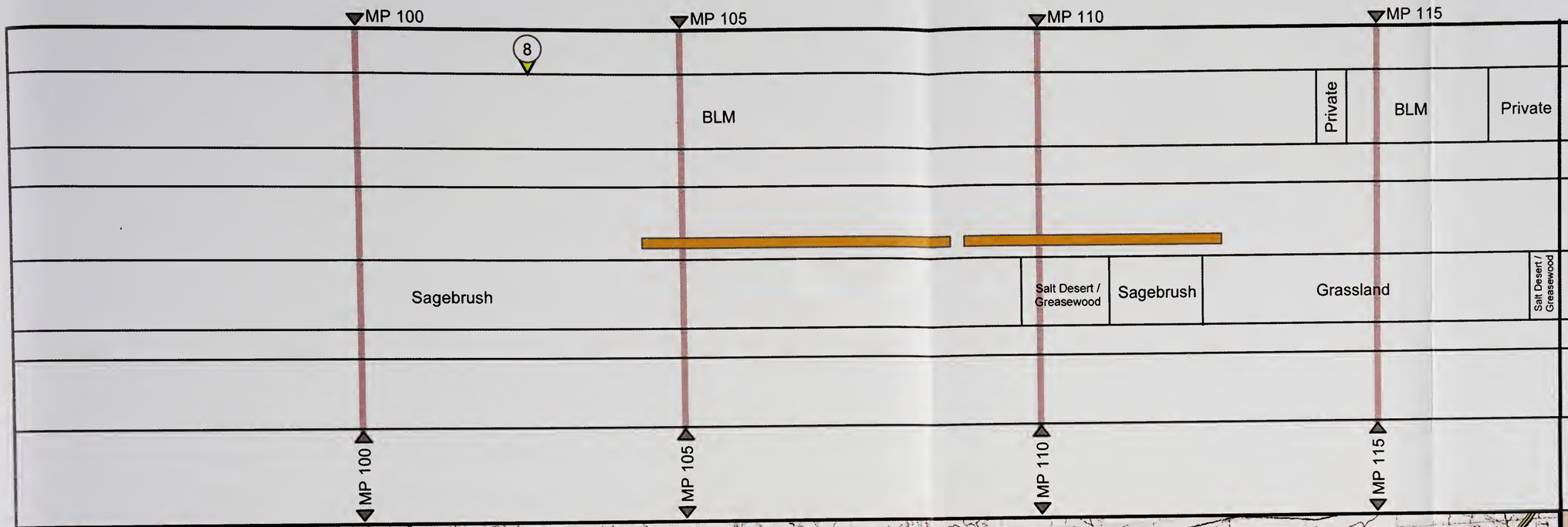


0 0.5 1 2 Kilometers
0 0.5 1 2 Miles

Scale = 1:100,000

USGS 1:100,000 series Kinney Rim, WY, Baggs, WY, and Craig, CO

1/12/05



Project Component

Land Ownership
(Federal, State, Private, Public ROW)

Transportation Crossings

Seasonal Wildlife Constraints
(Winter and Spring Constraints)

General Natural Vegetation Communities

Wetlands

Waterbodies Supporting Fisheries
(Warm and Cold Water Habitat)

ENTREGA PIPELINE PROJECT

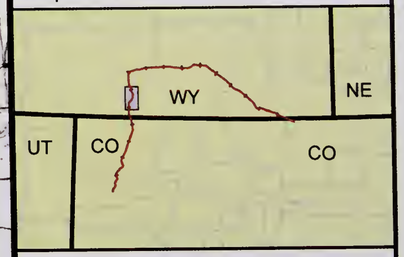
Map 6 of 17

Sweetwater County, WY

Legend

- Pipeline with Mileposts
- Access Roads
- Aboveground Project Facilities
- 2 Mainline Valves
- Match Lines

Map Location

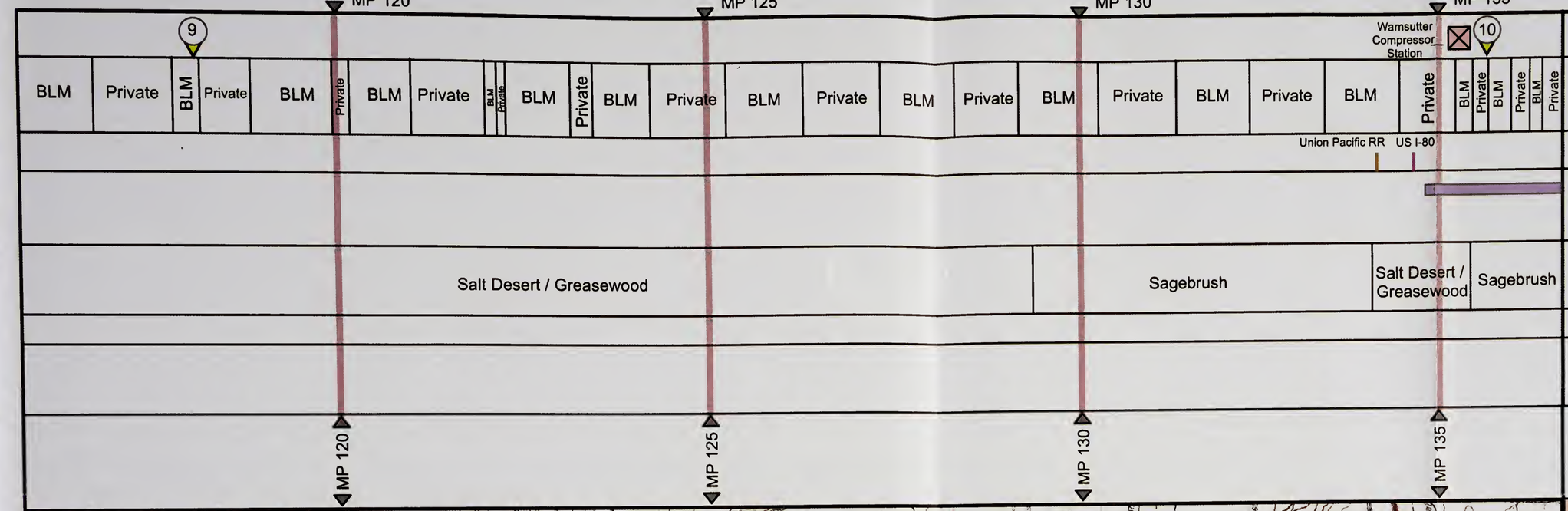


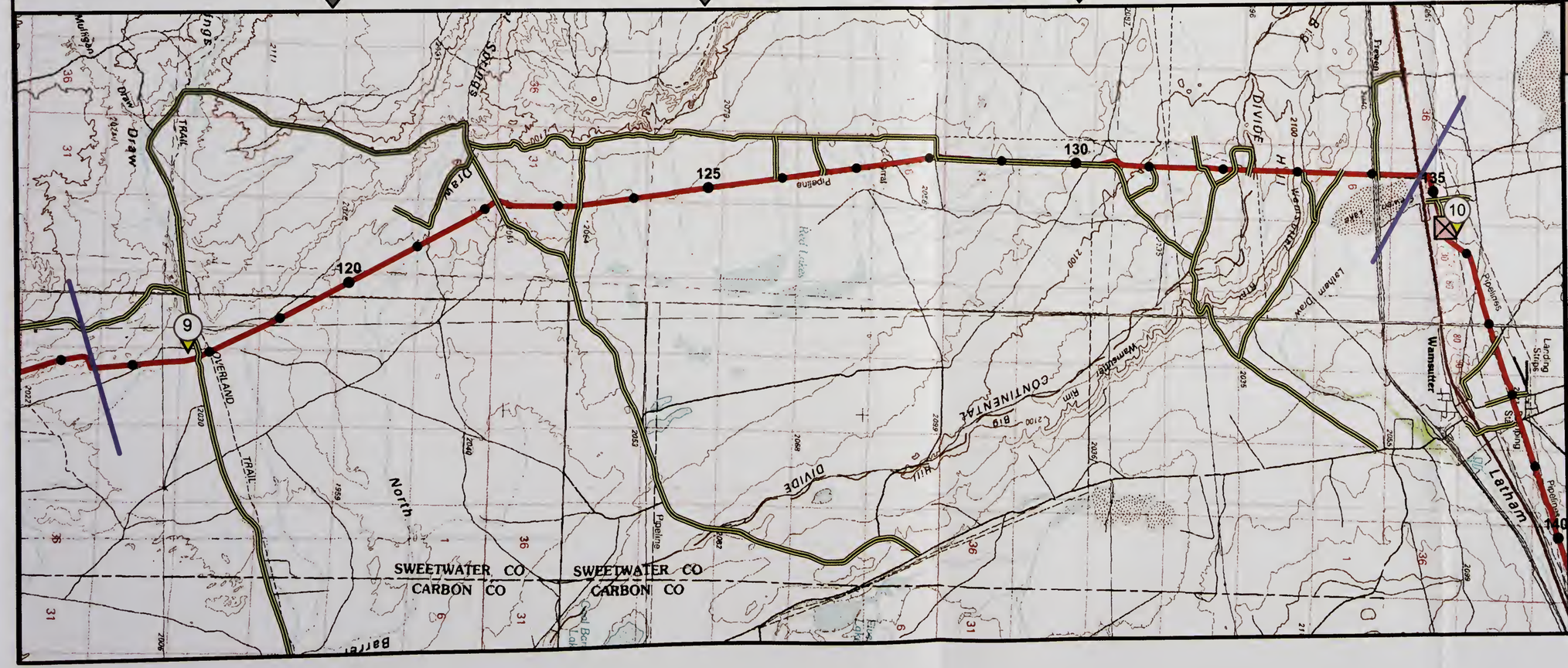
0 0.5 1 2 Kilometers
0 0.5 1 2 Miles

Scale = 1:100,000

USGS 1:100,000 series Kinney Rim, WY, and Baggs, WY

1/12/05





ENTREGA PIPELINE PROJECT

Map 7 of 17

Sweetwater County, WY

Project Component

Land Ownership
(Federal, State, Private, Public ROW)

Transportation Crossings

Seasonal Wildlife Constraints
(Winter and Spring Constraints)

General Natural Vegetation Communities

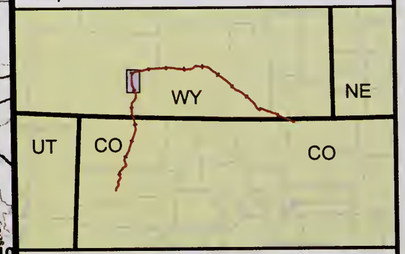
Wetlands

Waterbodies Supporting Fisheries
(Warm and Cold Water Habitat)

Legend

- Pipeline with Mileposts
- Access Roads
- Aboveground Project Facilities
- Mainline Valves
- Match Lines

Map Location



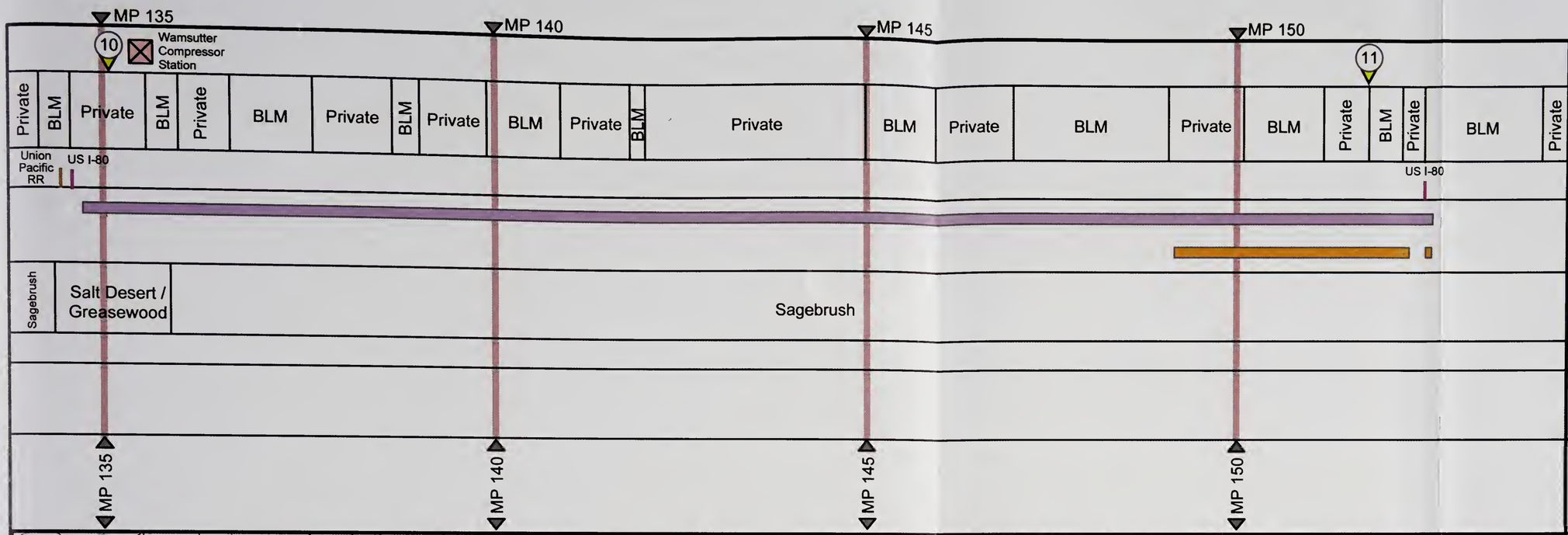
0 0.5 1 2 Kilometers

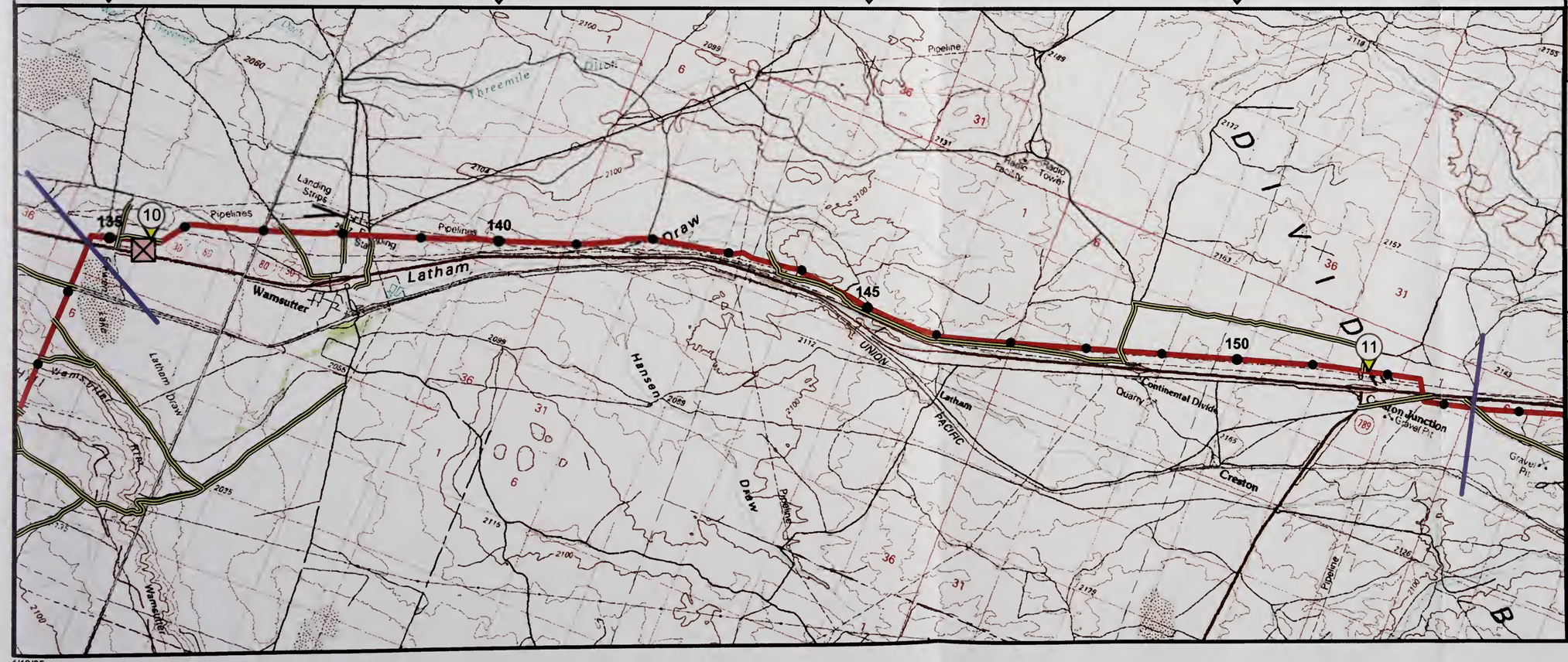
0 0.5 1 2 Miles

Scale = 1:100,000

USGS 1:100,000 series Red Desert Basin, WY, Kinney Rim, WY, Rawlins, WY, and Baggs, WY

1/12/05





Project Component

Land Ownership
(Federal, State, Private, Public ROW)

Transportation Crossings

Seasonal Wildlife Constraints
(Winter and Spring Constraints)

General Natural Vegetation Communities

Wetlands

Waterbodies Supporting Fisheries
(Warm and Cold Water Habitat)

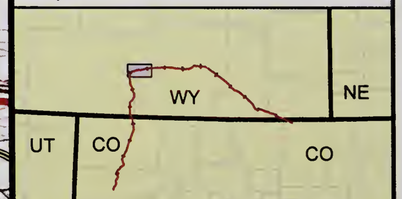
ENTREGA PIPELINE PROJECT

Map 8 of 17
Sweetwater County, WY

Legend

- Pipeline with Mileposts
- Access Roads
- Aboveground Project Facilities
- Mainline Valves
- Match Lines

Map Location

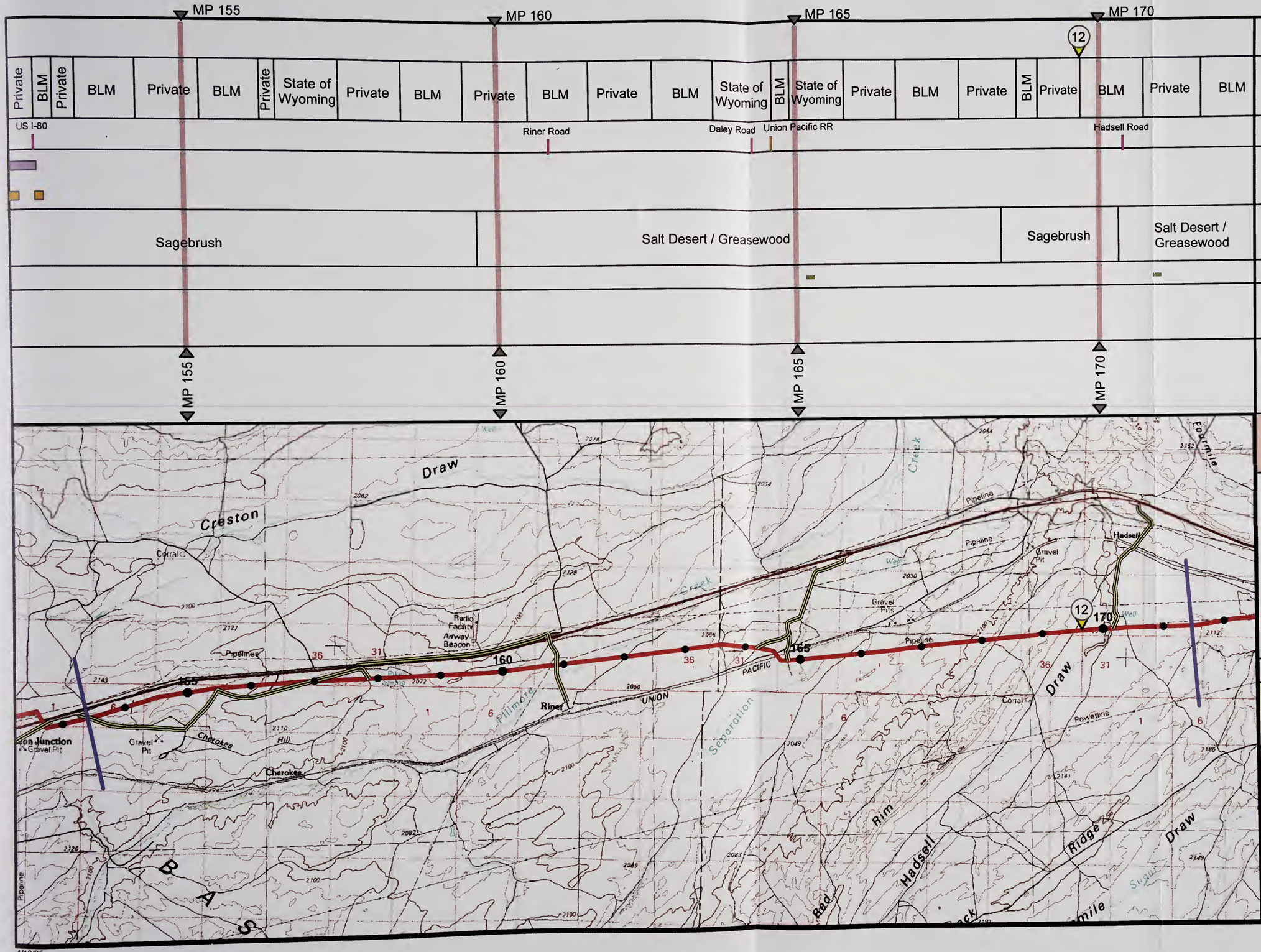


0 0.45 0.9 1.8 Kilometers
0 0.45 0.9 1.8 Miles

Scale = 1:100,000

USGS 1:100,000 series Rawlins, WY, and Red Desert Basin, WY

1/12/05



ENTREGA PIPELINE PROJECT

Map 9 of 17

Sweetwater County, WY, and Carbon County, WY

Project Component

Land Ownership
(Federal, State, Private, Public ROW)

Transportation Crossings

Seasonal Wildlife Constraints
(Winter and Spring Constraints)

General Natural Vegetation Communities

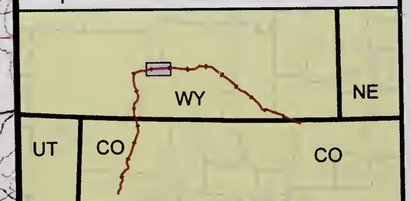
Wetlands

Waterbodies Supporting Fisheries
(Warm and Cold Water Habitat)

Legend

- Pipeline with Mileposts
- Access Roads
- Aboveground Project Facilities
- Mainline Valves (2)
- Match Lines

Map Location



N W E S

0 0.5 1 2 Kilometers

0 0.5 1 2 Miles

Scale = 1:100,000

USGS 1:100,000 series Rawlins, WY

1/12/05

MP 175 | MP 180 | MP 185 | MP 190

Private | BLM | Private | BLM | Private | BLM | Private | BLM | Private | State of Wyoming | Private | BLM | Private | BLM | Private | State of Wyoming | Private | BLM | Private | BLM

Carbon County CR 605 | Wyoming SR 71 | Carbon County CR 405

Salt Desert / Greasewood | Sagebrush | Salt Desert / Greasewood

MP 175 | MP 180 | MP 185 | MP 190

Project Component

Land Ownership
(Federal, State, Private, Public ROW)

Transportation Crossings

Seasonal Wildlife Constraints
(Winter and Spring Constraints)

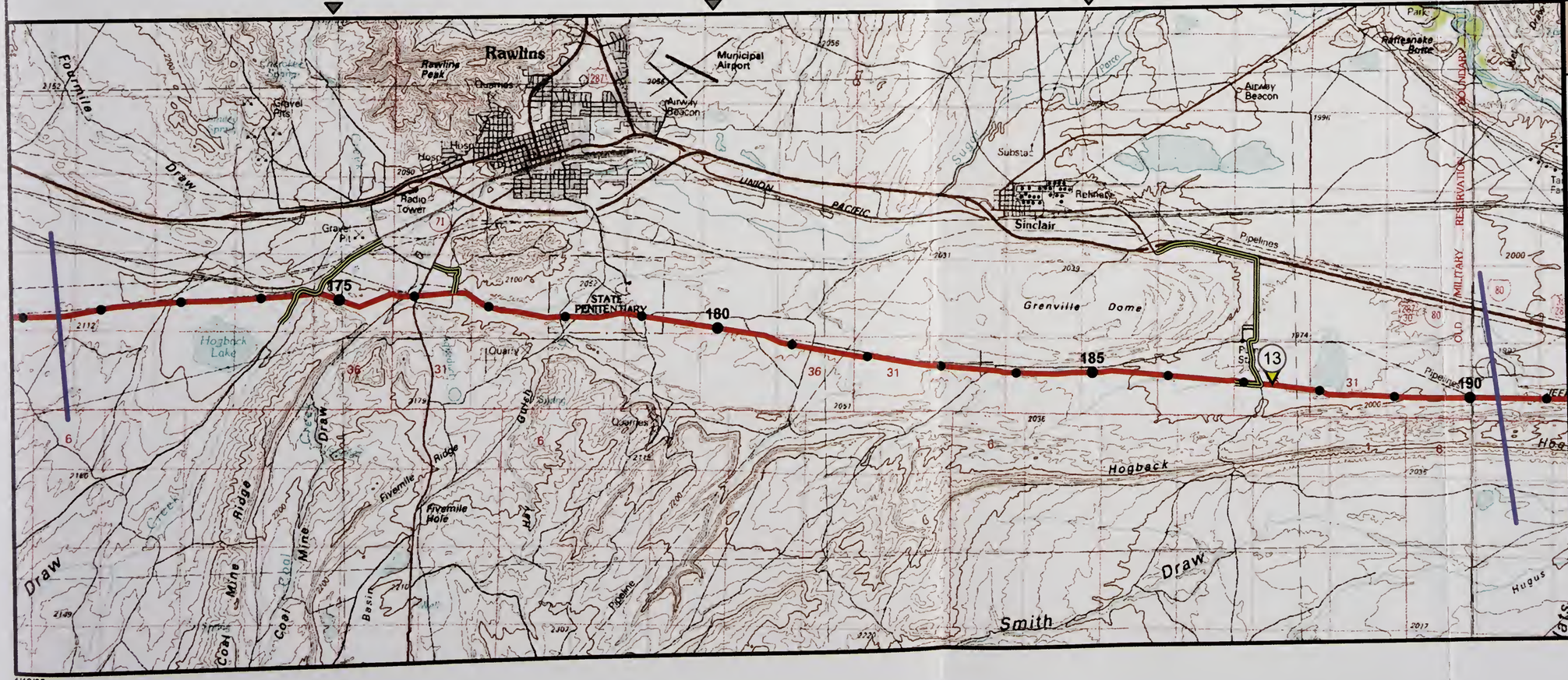
General Natural Vegetation Communities

Wetlands

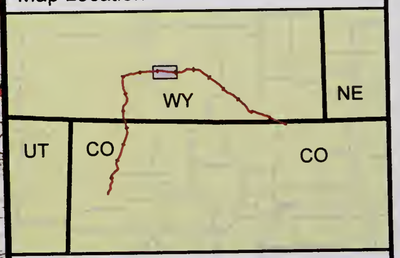
Waterbodies Supporting Fisheries
(Warm and Cold Water Habitat)

ENTREGA PIPELINE PROJECT

Map 10 of 17
Carbon County, WY



Legend
- Pipeline with Mileposts
- Access Roads
- Aboveground Project Facilities
- (2) Mainline Valves
- Match Lines

Map Location


N W E S

0 0.5 1 2 Kilometers

0 0.45 0.9 1.8 Miles

Scale = 1:100,000

USGS 1:100,000 series Rawlins, WY, and Medicine Bow, WY

1/12/05

MP 190 | MP 195 | MP 200 | MP 205 | MP 210

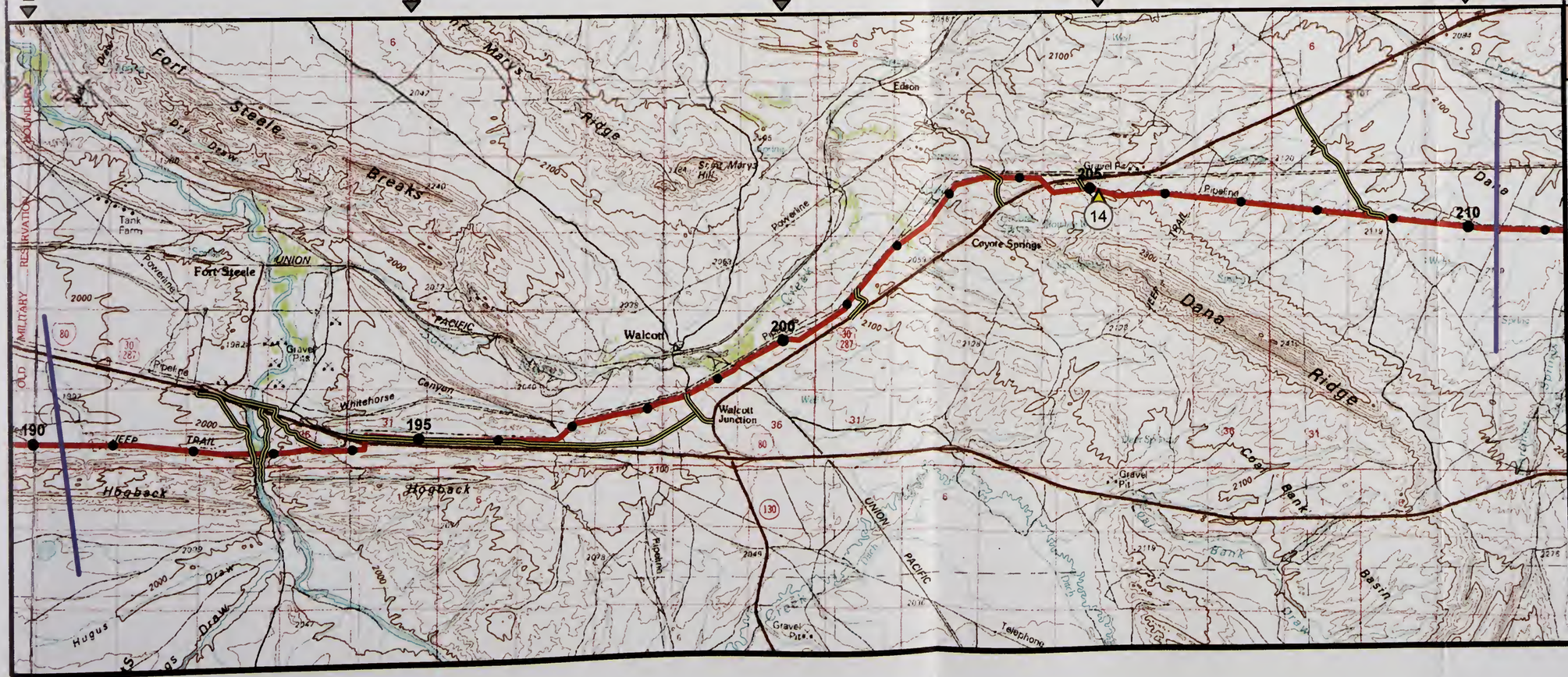
Private | BLM | Private | State of Wyoming | BLM | Private | BLM | Private | BLM | Private | BLM | Private | BLM | Private | State of Wyoming | Private | BLM | Private | BLM | Private | BLM | Private

Carbon County CR 247 | US I-80 | Carbon County CR 215 | Union Pacific RR | US I-80

Salt Desert / Greasewood | Salt Desert / Greasewood | Riparian Woodlands | Sagebrush

North Platte River

MP 190 | MP 195 | MP 200 | MP 205 | MP 210



ENTREGA PIPELINE PROJECT

Map 11 of 17

Carbon County, WY

Project Component

Land Ownership
(Federal, State, Private, Public ROW)

Transportation Crossings

Seasonal Wildlife Constraints
(Winter and Spring Constraints)

General Natural Vegetation Communities

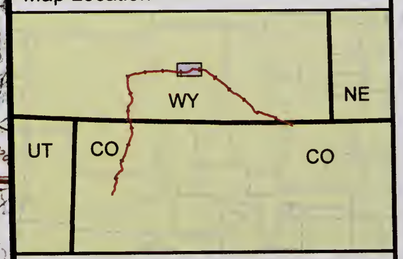
Wetlands

Waterbodies Supporting Fisheries
(Warm and Cold Water Habitat)

Legend

- Pipeline with Mileposts
- Access Roads
- Aboveground Project Facilities
- (2) Mainline Valves
- Match Lines

Map Location



N W E S

0 0.5 1 2 Kilometers

0 0.5 1 2 Miles

Scale = 1:100,000

USGS 1:100,000 series Rawlins, WY, and Medicine Bow, WY

1/12/05

MP 210 | MP 215 | MP 220 | MP 225 | MP 230

Private | BLM | Private | BLM | Private | BLM | Private | BLM | Private | Private | BLM | Private | BLM | Private | BLM | Private | BLM | Private | BLM | Private | BLM | Private | State of Wyoming | Private | State of Wyoming | Private | State of Wyoming | Private | State of Wyoming | Private

Sagebrush | Agriculture | Sagebrush | Riparian Woodlands | Sagebrush

Medicine Bow River | Bear Creek | Wagonhound Creek

MP 210 | MP 215 | MP 220 | MP 225 | MP 230

Project Component

Land Ownership
(Federal, State, Private, Public ROW)

Transportation Crossings

Seasonal Wildlife Constraints
(Winter and Spring Constraints)

General Natural Vegetation Communities

Wetlands

Waterbodies Supporting Fisheries
(Warm and Cold Water Habitat)

ENTREGA PIPELINE PROJECT

Map 12 of 17

Carbon County, WY

Legend

- Pipeline with Mileposts
- Access Roads
- Aboveground Project Facilities
- 2 Mainline Valves
- Match Lines

Map Location

WY | NE | UT | CO | CO

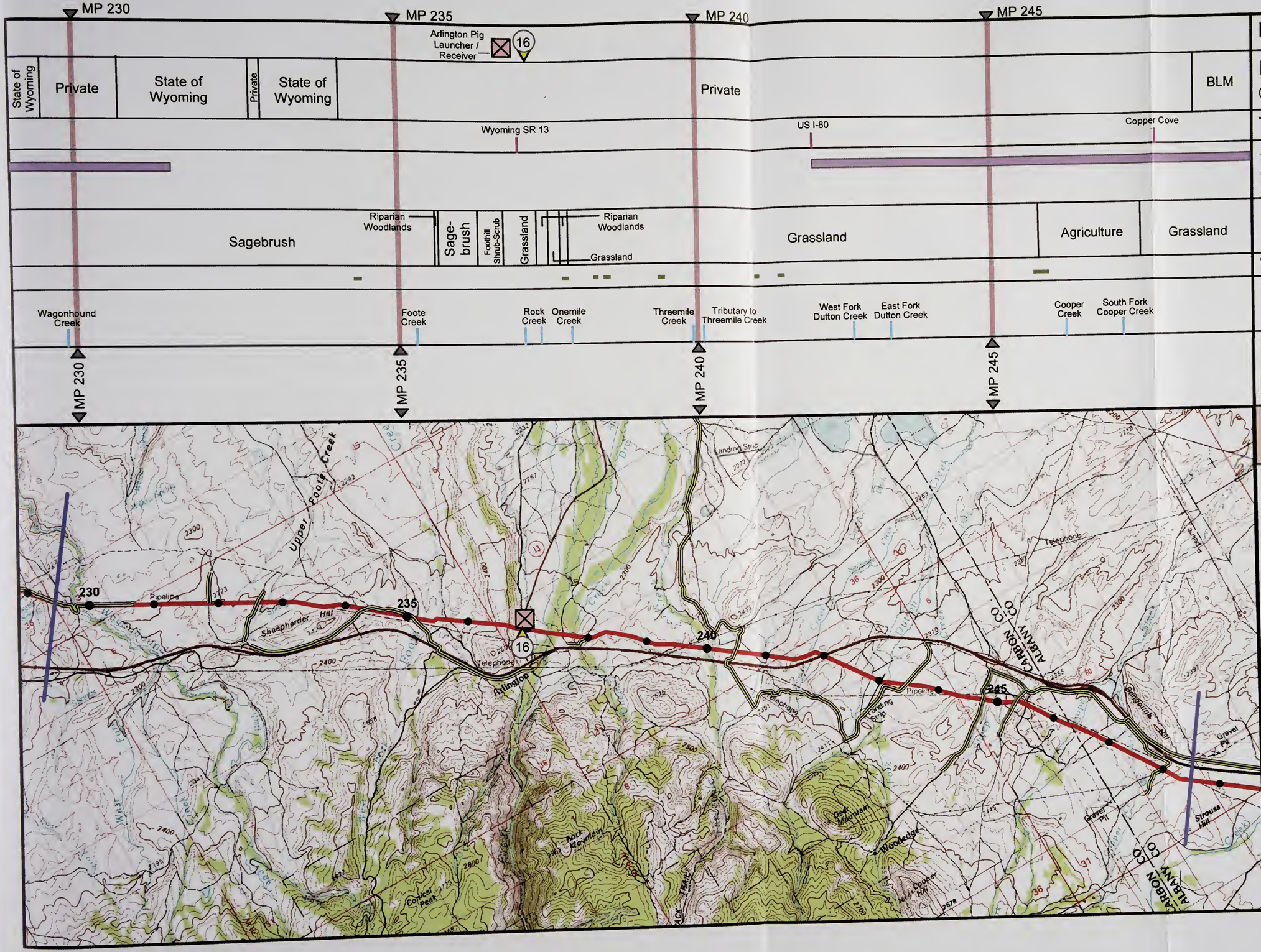
0 0.45 0.9 1.8 Kilometers

0 0.45 0.9 1.8 Miles

Scale = 1:100,000

USGS 1:100,000 series Medicine Bow, WY

1/12/05



ENTREGA PIPELINE PROJECT

Map 13 of 17

Carbon County, WY
and Albany County, WY

Project Component

Land Ownership
(Federal, State, Private, Public ROW)

Transportation Crossings

Seasonal Wildlife Constraints
(Winter and Spring Constraints)

General Natural Vegetation Communities

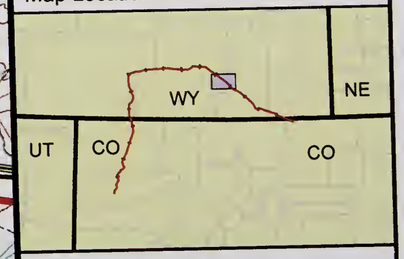
Wetlands

Waterbodies Supporting Fisheries
(Warm and Cold Water Habitat)

Legend

- Pipeline with Mileposts
- Access Roads
- Aboveground Project Facilities
- Mainline Valves (2)
- Match Lines

Map Location

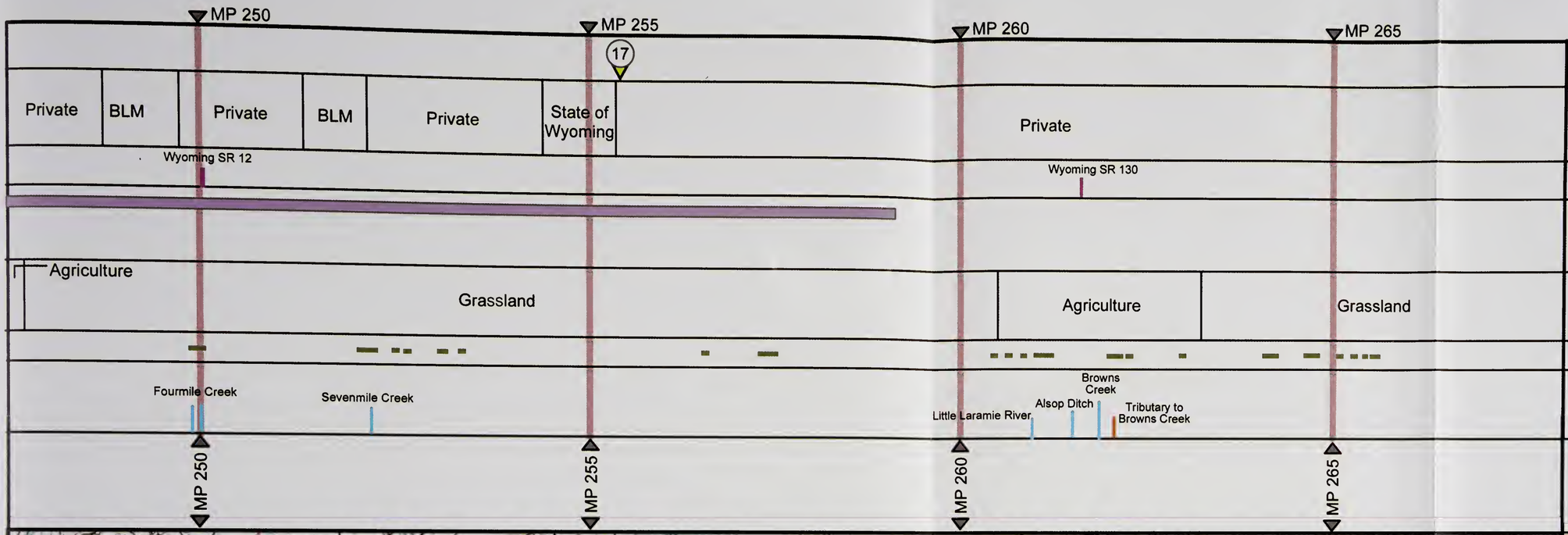


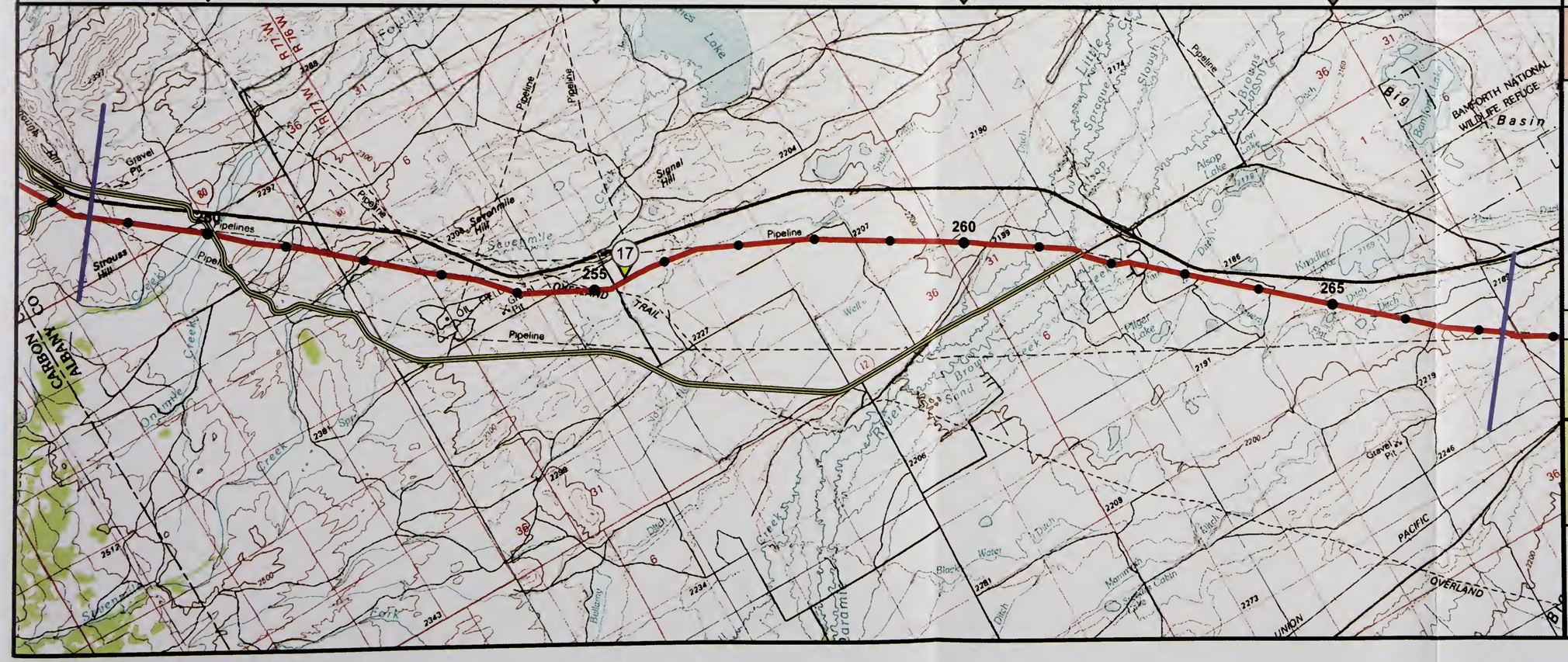
0 0.5 1 2 Kilometers
0 0.5 1 2 Miles

Scale = 1:100,000

USGS 1:100,000 series Medicine Bow, WY, and Saratoga, WY

1/12/05





Project Component

Land Ownership
(Federal, State, Private, Public ROW)

Transportation Crossings

Seasonal Wildlife Constraints
(Winter and Spring Constraints)

General Natural Vegetation Communities

Wetlands

Waterbodies Supporting Fisheries
(Warm and Cold Water Habitat)

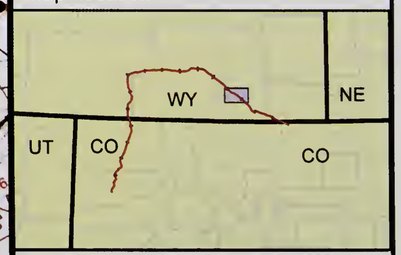
ENTREGA PIPELINE PROJECT

Map 14 of 17
Albany County, WY

Legend

- Pipeline with Mileposts
- Access Roads
- Aboveground Project Facilities
- Mainline Valves
- Match Lines

Map Location

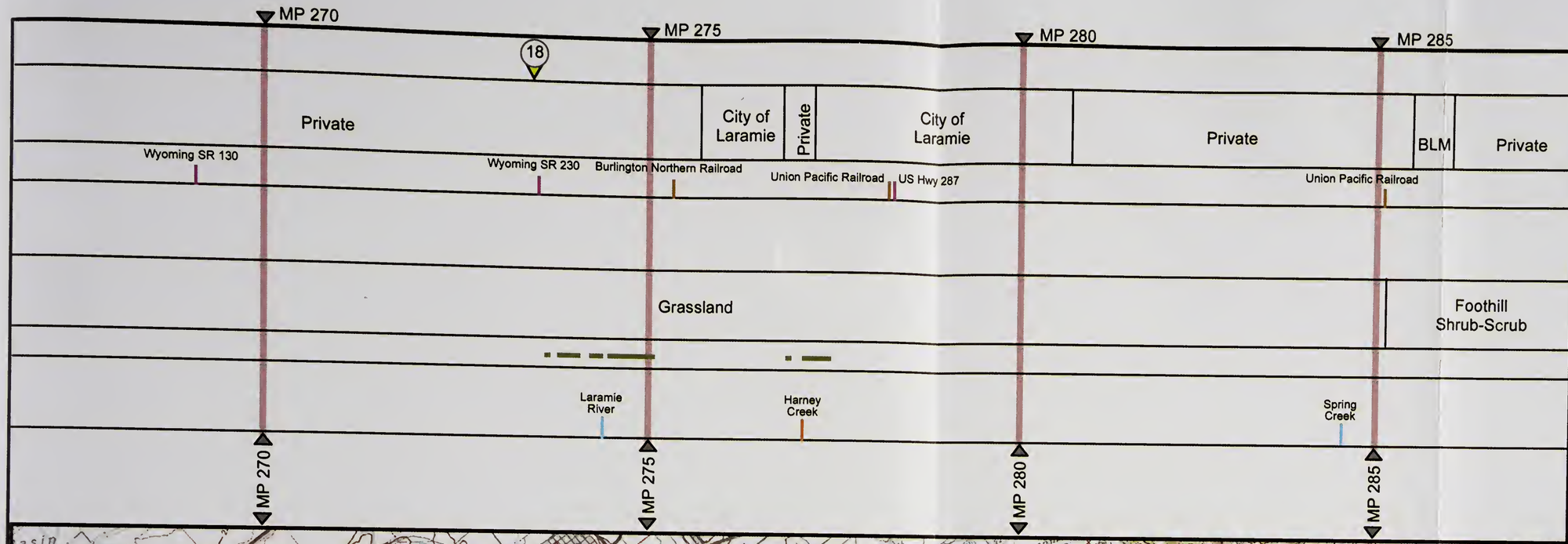


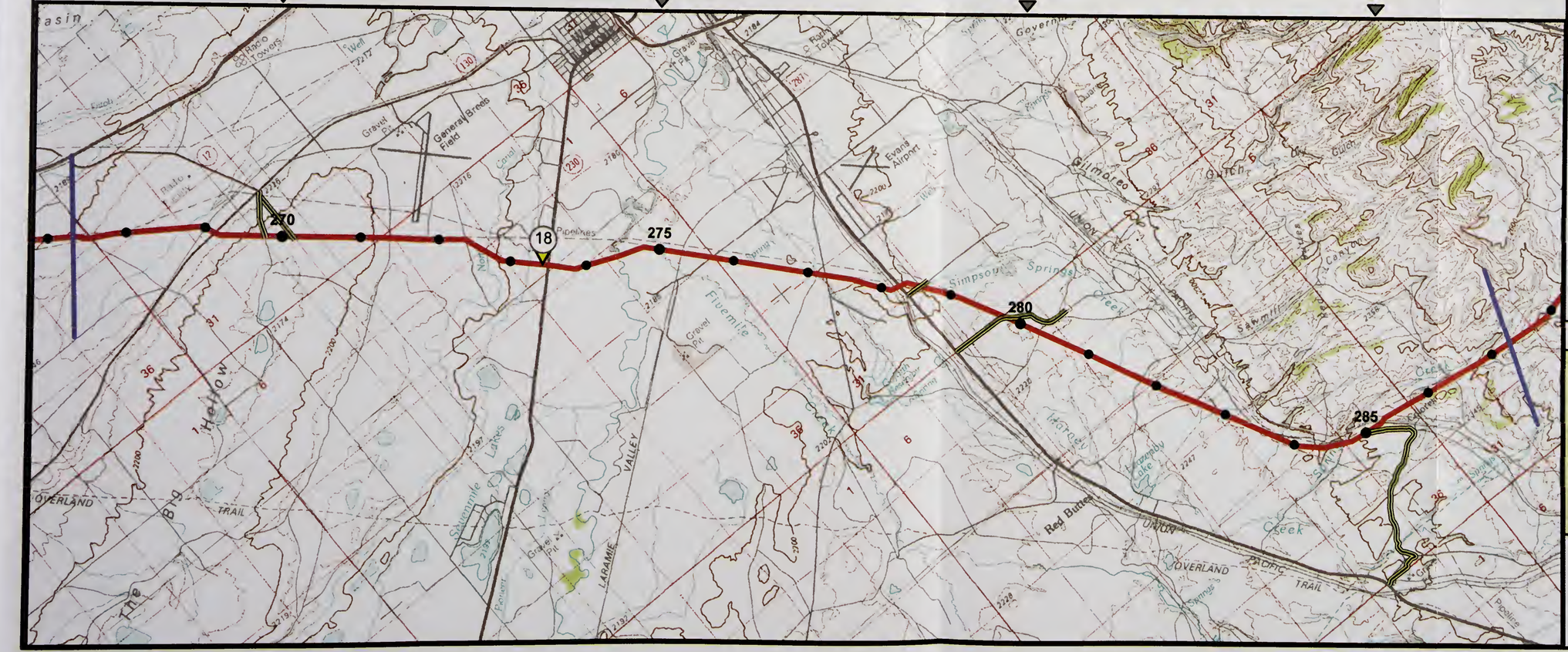
0 0.45 0.9 1.8 Kilometers
0 0.45 0.9 1.8 Miles

Scale = 1:100,000

USGS 1:100,000 series Medicine Bow, WY, Saratoga, WY, and Laramie, WY

1/12/05





Project Component
Land Ownership (Federal, State, Private, Public ROW)
Transportation Crossings
Seasonal Wildlife Constraints (Winter and Spring Constraints)
General Natural Vegetation Communities
Wetlands
Waterbodies Supporting Fisheries (Warm and Cold Water Habitat)

ENTREGA PIPELINE PROJECT

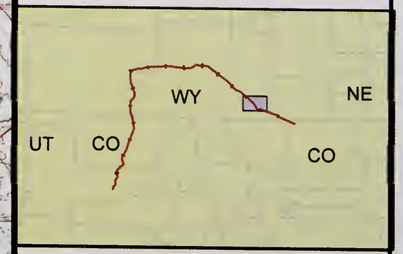
Map 15 of 17

Albany County, WY

Legend

- Pipeline with Mileposts
- Access Roads
- Aboveground Project Facilities
- Mainline Valves
- Match Lines

Map Location



0 0.5 1 2 Kilometers

0 0.5 1 2 Miles

Scale = 1:100,000

USGS 1:100,000 series Laramie, WY

1/12/05



ENTREGA PIPELINE PROJECT

Map 16 of 17

Albany County, WY, and Laramie County, WY

Project Component

Land Ownership
(Federal, State, Private, Public ROW)

Transportation Crossings

Seasonal Wildlife Constraints
(Winter and Spring Constraints)

General Natural Vegetation Communities

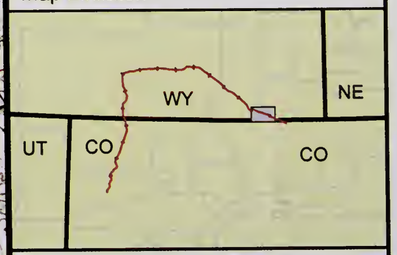
Wetlands

Waterbodies Supporting Fisheries
(Warm and Cold Water Habitat)

Legend

- Pipeline with Mileposts
- Access Roads
- Aboveground Project Facilities
- (2) Mainline Valves
- Match Lines

Map Location



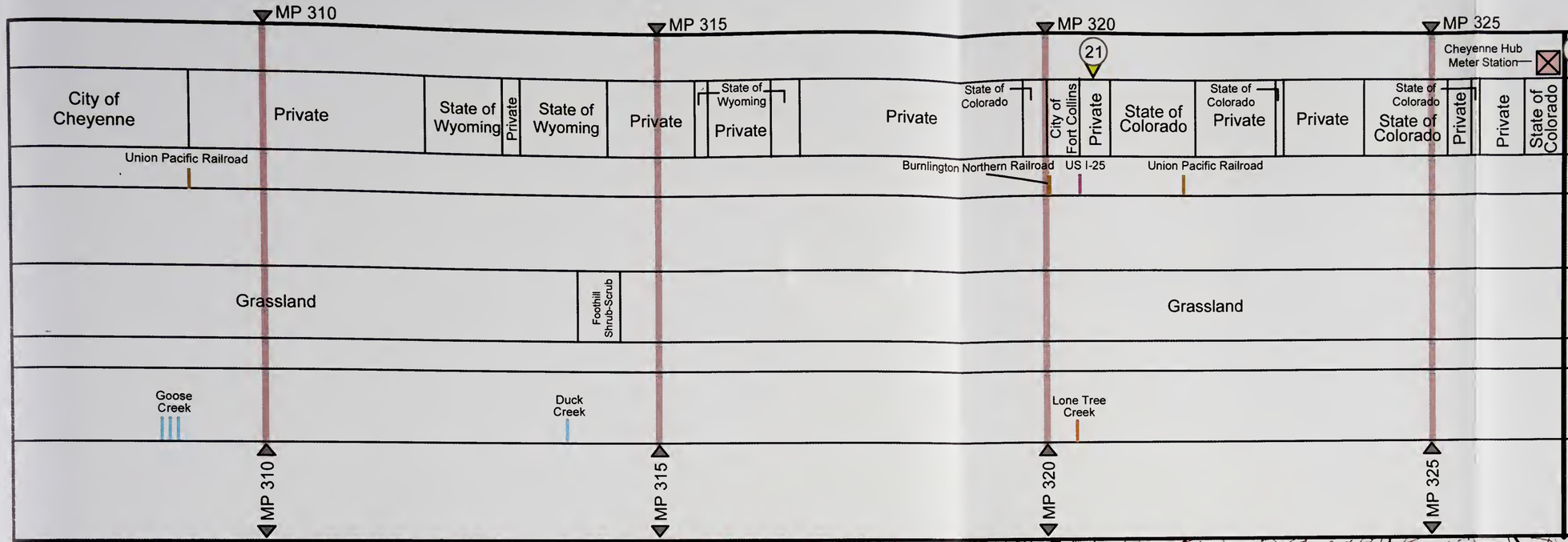
0 0.45 0.9 1.8 Kilometers

0 0.45 0.9 1.8 Miles

Scale = 1:100,000

USGS 1:100,000 series Laramie, WY

1/12/05





ENTREGA PIPELINE PROJECT

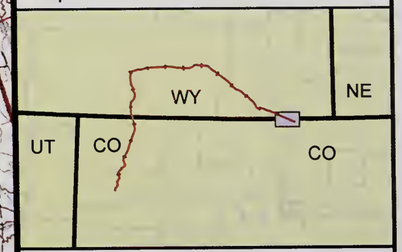
Map 17 of 17

Laramie County, WY, Larimer County, CO, and Weld County, CO

Legend

- Pipeline with Mileposts
- Access Roads
- Aboveground Project Facilities
- 2 Mainline Valves
- Match Lines

Map Location



N E S W

0 0.5 1 2 Kilometers

0 0.5 1 2 Miles

Scale = 1:100,000

USGS 1:100,000 series Laramie, WY, Fort Collins, CO, and Eaton, CO

1/12/05

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LIST OF PREPARERS AND REVIEWERS

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Lee Meacham – Carbon County Commissioner		General review

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_____. 2004b. Telephone communication on July 12, between A. Swensen (Natural Resource Group, Inc.) and H. Cline (Bureau of Land Management - Rawlins Field Office (307) 328-4232).

_____. 2004c. Telephone communication on July 2, between A. Swenson (Natural Resource Group, Inc.) and F. Blomquist (Bureau of Land Management - Rawlins Field Office (307) 328-4207).

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GLOSSARY

GLOSSARY

alluvial	material composed of riverbed or delta material.
ancillary facilities	facilities associated with the pipeline system, including compressor stations, valves, and metering stations.
aquifer	a layer of underground sand, gravel, or porous rock in which water collects; a source of groundwater.
cathodic protection	a method to reduce external corrosion by placing a small electrical charge on the steel pipe.
corrosion	an electrochemical process that occurs when steel is exposed to an electrolyte, such as soil or water. Corrosion can occur along the internal or external surfaces of the pipe. External corrosion is reduced by cathodic protection and pipeline coatings. Corrosion is monitored by internal inspection tools (internal and external corrosion) and corrosion coupons (internal corrosion).
depth of cover	in new construction areas, the burial depth typically would be 36 inches from the top of the pipe to the natural grade. No depth of cover is specified for existing pipe under OPS regulations.
easement	a legal instrument, usually negotiated with the landowner, that is used to convey a ROW to the pipeline company. The easement gives the pipeline company the right to operate and maintain its pipeline in the permanent ROW and, in return, compensates the landowner for the use of the land.
eminent domain	the right of the government to take private property for public use after providing just compensation by virtue of the sovereign power over all lands within its jurisdiction.
fugitive dust	a non-point source of air pollution, such as from unpaved roads, agricultural croplands, and construction sites.

High Consequence Areas (HCAs)	OPS-defined areas subject to the Integrity Management Rule. HCAs include high-density population areas, waters where commercial navigation occurs, and areas that are unusually sensitive to environmental damage.
horizontal directional drilling	technology used for vertical drilling has been modified for the horizontal installation of pipelines beneath major obstacles, such as rivers, railroads, and highways.
hydrostatic testing	pressure testing of a pipeline to test its structural integrity. Typically the line is tested to at least 125 percent of the MAOP and the pressure is held for 8 hours. Hydrostatic testing is a destructive test to evaluate the integrity of the pipe. A pipe that passes this test is considered safe to operate at pressures less than or equal to the MAOP.
Integrity Management Rule	as defined in 49 CFR 192, this OPS rule increases requirements for inspection, enhanced damage protection, improved emergency response, and other measures to prevent and mitigate pipeline leaks in HCAs.
internal inspection tool	a "smart pig"; tools that assess the pipeline's integrity. At this time, there are three primary types of internal inspection tools: caliper pigs, magnetic leak flux pigs, and ultrasonic pigs.
L_{dn}	Day-night (average sound) level.
liquefaction	The process by which water-saturated sediments lose strength and may fail during strong earthquake induced ground shaking. Liquefaction can result in the loss of ground bearing capacity or lateral spreading, both of which could potentially damage pipelines and ancillary facilities. Soil liquefaction hazards are associated with unconsolidated alluvial soils with a high water table.
Maximum Allowable Operating Pressure (MAOP)	a rating indicating the maximum pressure at which a pipeline or segment of a pipeline may be operated under the DOT regulations in normal conditions.

metering stations	devices that measure the amount of natural gas transported and delivered.
pig	a plug designed to be pushed along the inside of a pipeline. Pigs can be used to separate materials, clean, or inspect the pipeline's surface.
pig launcher/receiver	a short section of pipe controlled by valves that interconnect with the main pipeline to launch and receive cleaning and inspection tools ("pigs") that travel inside the pipeline.
right-of-way (ROW)	a legal right of passage over another's property. Typically, the ROW would consist of a 50-foot-wide permanent ROW and, during construction, an additional 50-foot construction ROW.
ROW grant	as defined in 43 CFR 288. A document authorizing a non-possessory, non-exclusive right to use specified federal lands for the limited purpose of construction, operation, purpose of construction, operation, maintenance, and termination of a pipeline. Typically, the grant includes agency stipulations, conditions imposed on the project as a result of the NEPA review, a complete POD, and approvals from other federal agencies.
SCADA	Supervisory Control and Data Acquisition; computerized system that monitors and analyses the pressure within the pipeline every 3 to 5 seconds, notifying operators of any operating abnormalities.
seasonal constraints	time periods when construction may be restricted, such as constraint periods associated with breeding birds.
smart pig	An internal inspection tool that passes inside a pipe and contains electronic devices capable of measuring pipe integrity.
well head protection areas	areas where land uses are managed to protect and maintain the quality of groundwater.

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